Kaysun

Zen On /Off

Service Manual 2014

Frigicoll

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※The specifications, designs, and information in this book are subject to change without notice for product improvement.

Part 1
General Information

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1. Model Lists

1.1 Indoor Units

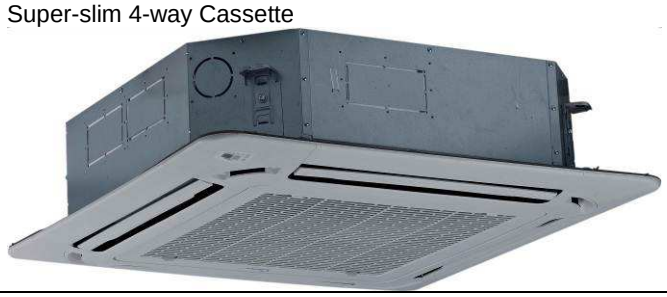
R410A		Capacity multiplied by 1000Btu/h			
Type	Function	45	48	51	55
Duct	Cooling and heating	●		●	
Super-slim 4-way cassette	Cooling and heating	●		●	
Ceiling & Floor	Cooling and heating	●		●	

1.2 Outdoor Units

Universal Outdoor unit Model	Compressor type	Compressor Brand	Matched indoor units
Heat Pump			
KUE-140 HTN6	SCROLL	SANYO	**KPD-140 HN6** **KCIS-140 HN6** **KPC-140 HN6**
KUE-176 HTN6	SCROLL	SANYO	**KPD-140 HN6** **KCIS-176 HN6** **KPC-176 HN6**

2. External Appearance

2.1 Indoor Units

Duct 	Super-slim 4-way Cassette 
Ceiling & floor type 	

2.2 Outdoor Units

Double fan outdoor unit

3. Features

3.1 High quality coils:

The coil is constructed of advanced inner grooved copper tube and aluminum fins.

3.2 Anti-rust, 500 hours salt spray test.

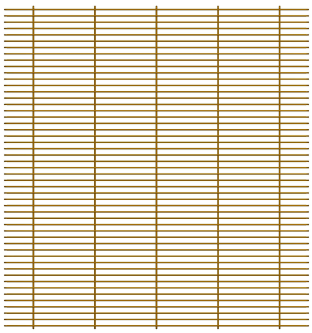
3.3 Low operation sound level: Well-known stable and quiet running fan motor.

3.4 Well-known compressor.

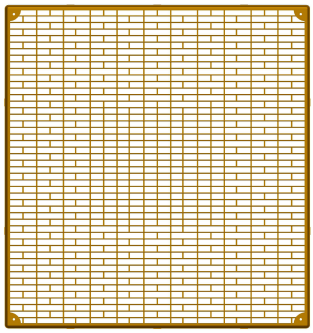
3.5 Compact design: Smaller dimension and larger stuffing capacity.

3.6 Universal outdoor unit design.

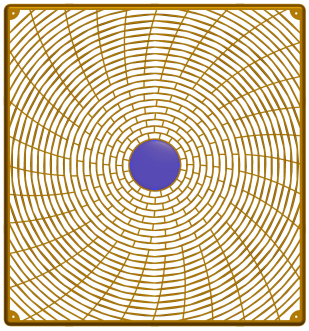
3.7 Optional air outlet grille: plastic type and wire type.



Wire type



Plastic type



Plastic type

3.8 Optional low temperature cooling module.

3.9 R410A environment friendly refrigerant.

Part 2
Indoor Units

Duct Type 6

Super-slim Cassette Type 19

Ceiling & Floor Type 32

Duct Type

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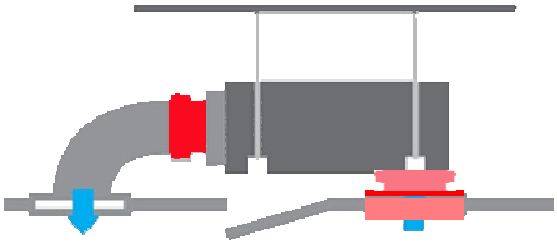
1. Features

1.1 Installation accessories: (Optional)

- Front Board, Canvas Air Passage, Filter, Panel, for easy installation

Front Board



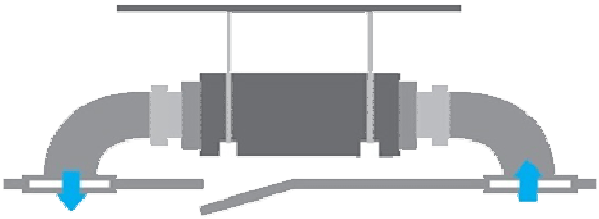
Canvas Air Passage

Filter

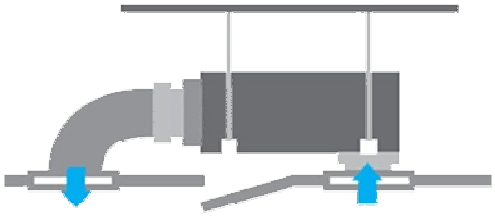
Panel

1.2 Easy Installation: Two air inlet styles (Bottom side or Rear side)

- Air inlet from rear is standard for all capacity; air inlet from bottom is optional.
- The size of air inlet frame from rear and bottom is same, it's very easy to move the cover from bottom to rear side, or from rear to the bottom, in order to matching the installation condition.



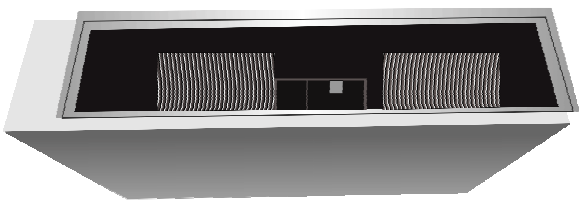
Air intake from rear (Standard)



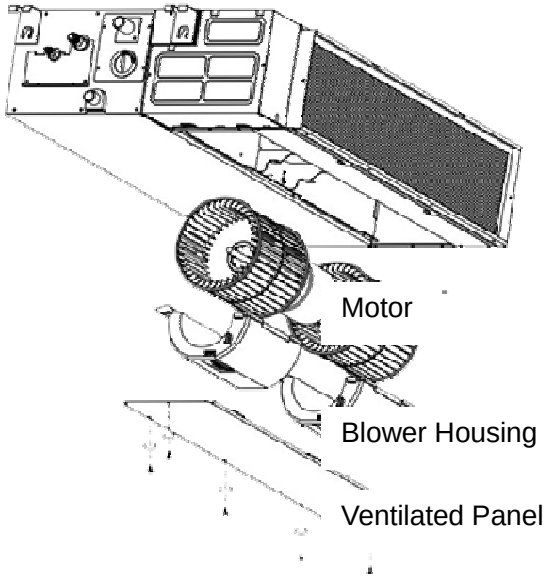
Air intake from bottom (Optional)

1.3 Easy maintenance

- Clean the filter (Optional, standard product without filter)
  It is easy to draw out the filter from the indoor unit for cleaning, even the filter is installed in rear side or bottom side.

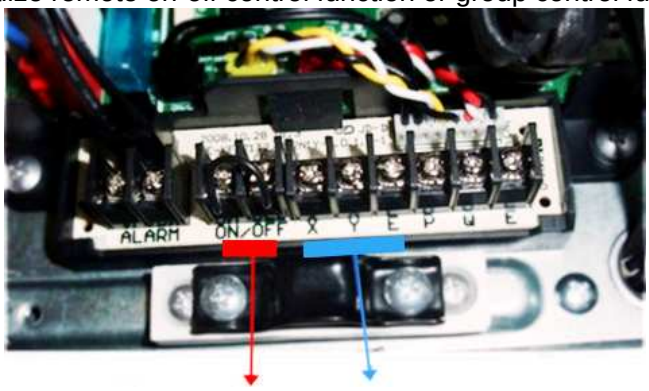


- Replace the motor or centrifugal fan
  Remove the ventilated panel firstly. Remove a half of blower housing and take out the motor with centrifugal fan. Directly remove two bolts, and then replace the motor or centrifugal fan easily.



1.4 Reserved remote on-off and central control ports

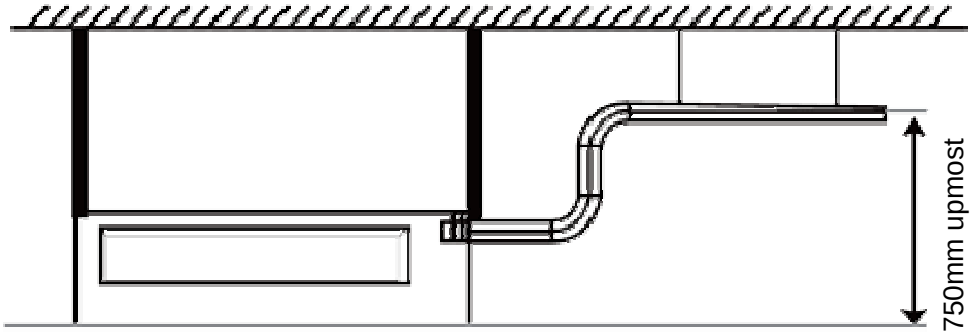
- Reserved remote on-off ports and central control ports, can connect the cable of an on-off controller or a central controller to realize remote on-off control function or group control function.

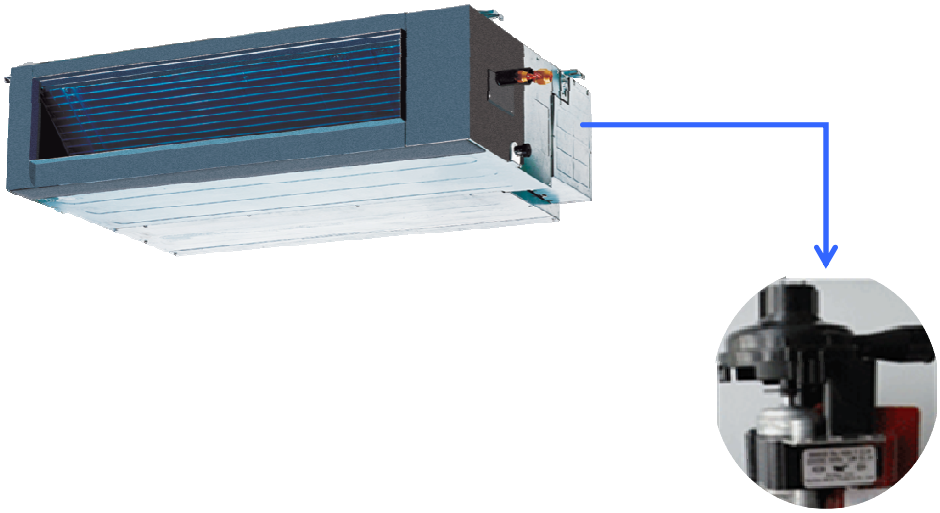


Remote on-off ports Central control ports

1.5 Built-in drain pump (Optional):

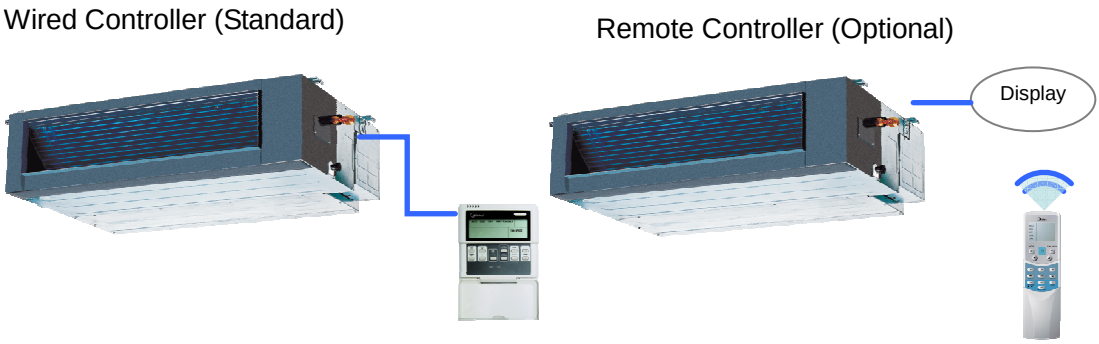
- Built-in drain pump can lift the water to 750mm upmost. It's convenient to install drainage piping under most space condition.





1.6 Built-in display board

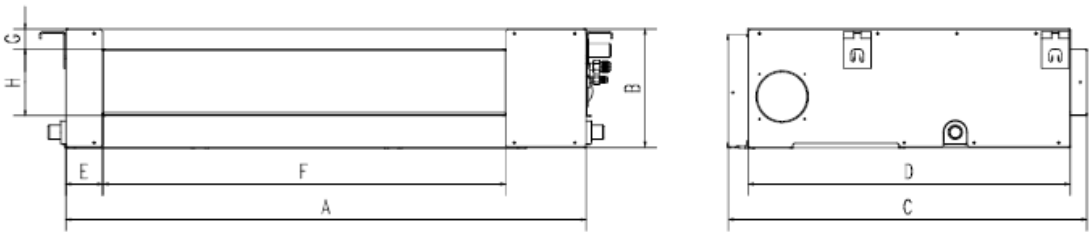
- The standard indoor unit can be controlled by wired controller.
- There is a display board with a receiver in the E-box. Move out the display, and fix it in other place, even in the distance of 10m. The unit will realized remoter control.
- The wired controller and the display board can display the error code or production code when the chips detect some failure.



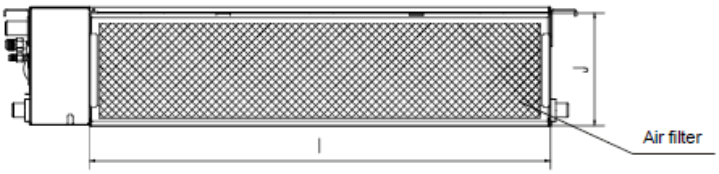
2. Dimensions

Outline dimension and air outlet opening size

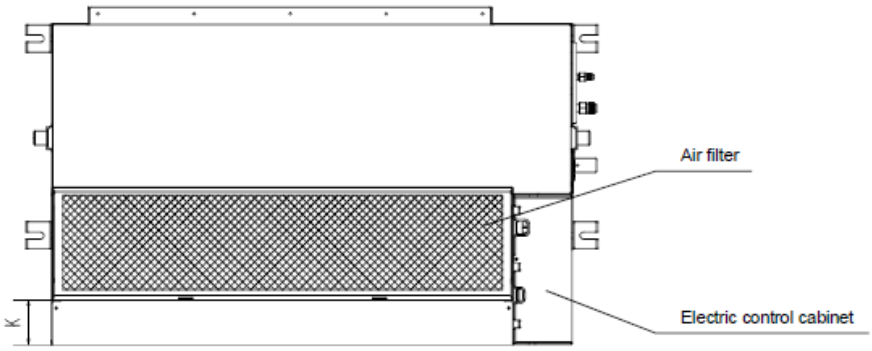
Unit: mm



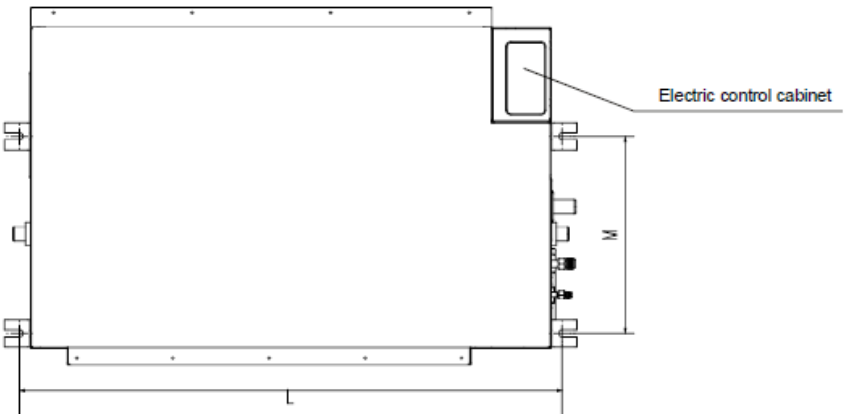
Air return opening size



Position size of descensional ventilation opening



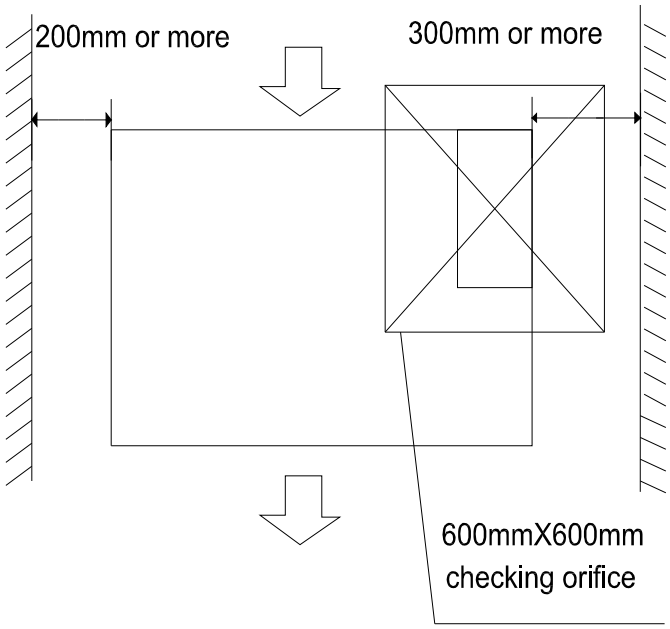
Size of mounted lug



Capacity (KBtu)	Outline dimension(mm)				Air outlet o pening size				Air return opening size			Size of outline dimension mounted plug	
	A	B	C	D	E	F	G	H	I	J	K	L	M
45~60	1200	300	865	800	80	968	40	204	1094	288	45	1240	500

3. Service Space

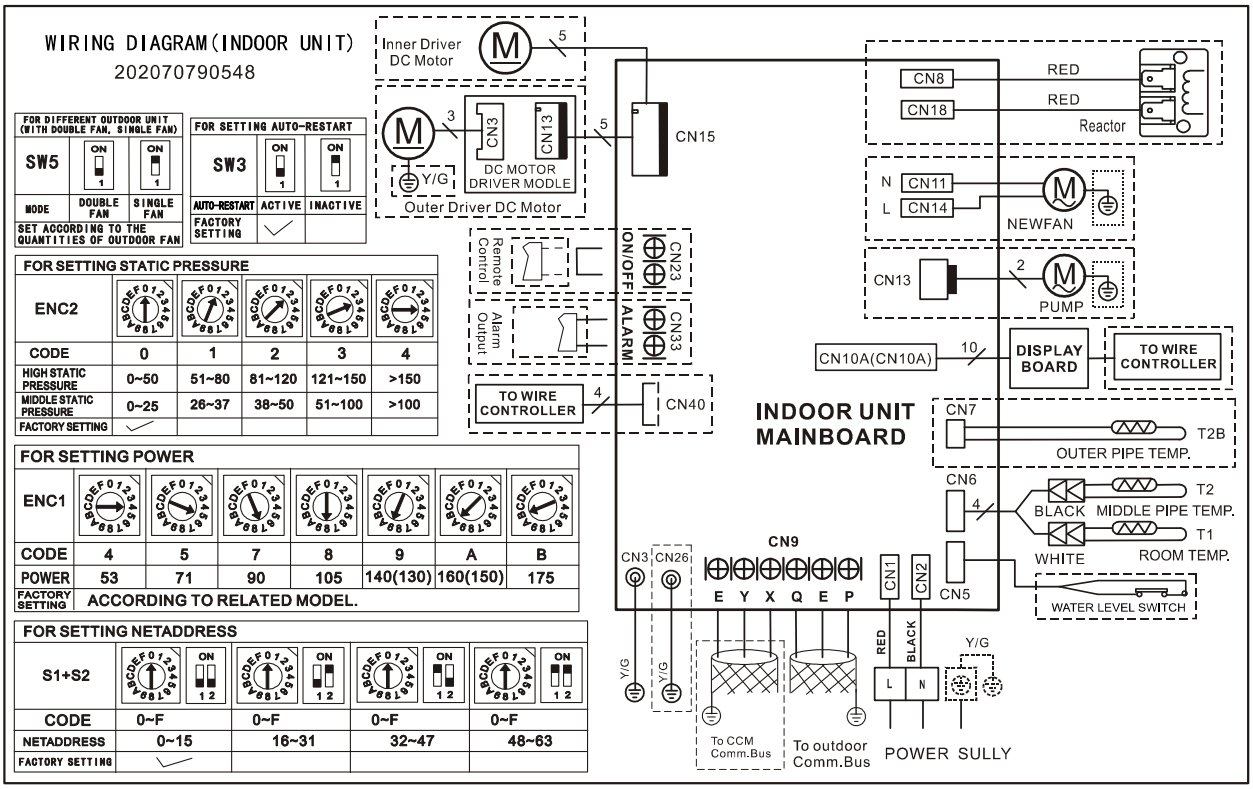
Ensure enough space required for installation and maintenance.



There is enough space for installation and maintenance. The ceiling is horizontal, and its structure can endure the weight of the indoor unit. The outlet and the inlet are not impeded, and the influence of external air is the least. The air flow can reach throughout the room. The connecting pipe and drainpipe could be extracted out easily. There is no direct radiation from heater.

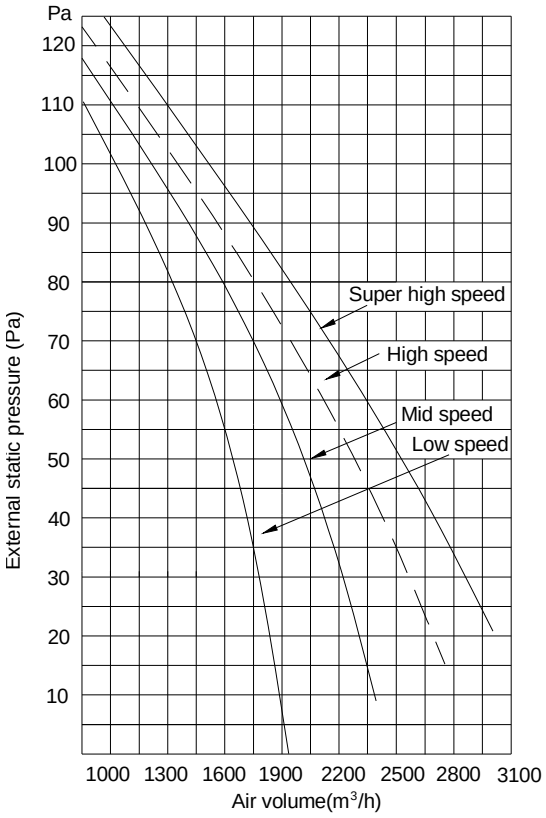
4. Wiring Diagrams

KPD-140 HN6、KPD-176 HN6

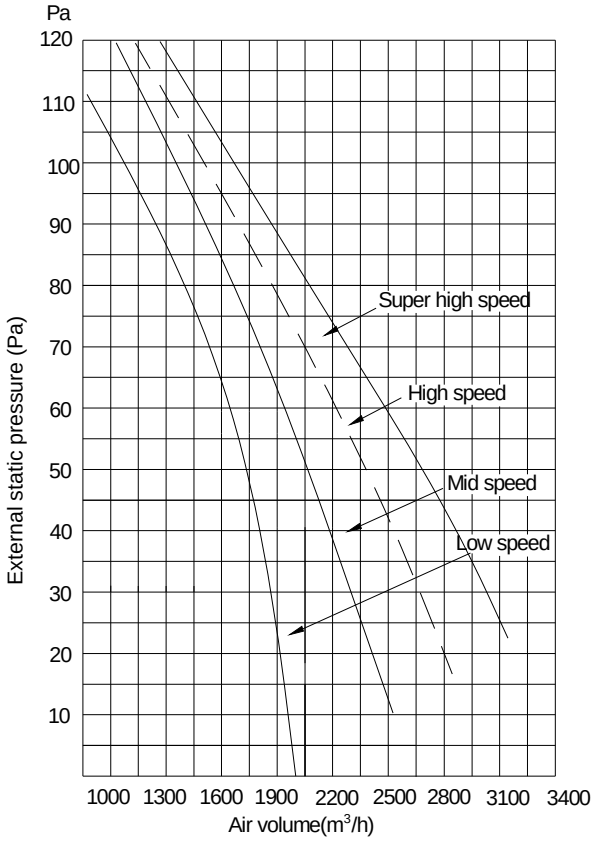


5. Static Pressure

45,000-48,000Btu/h



51,000-60,000Btu/h

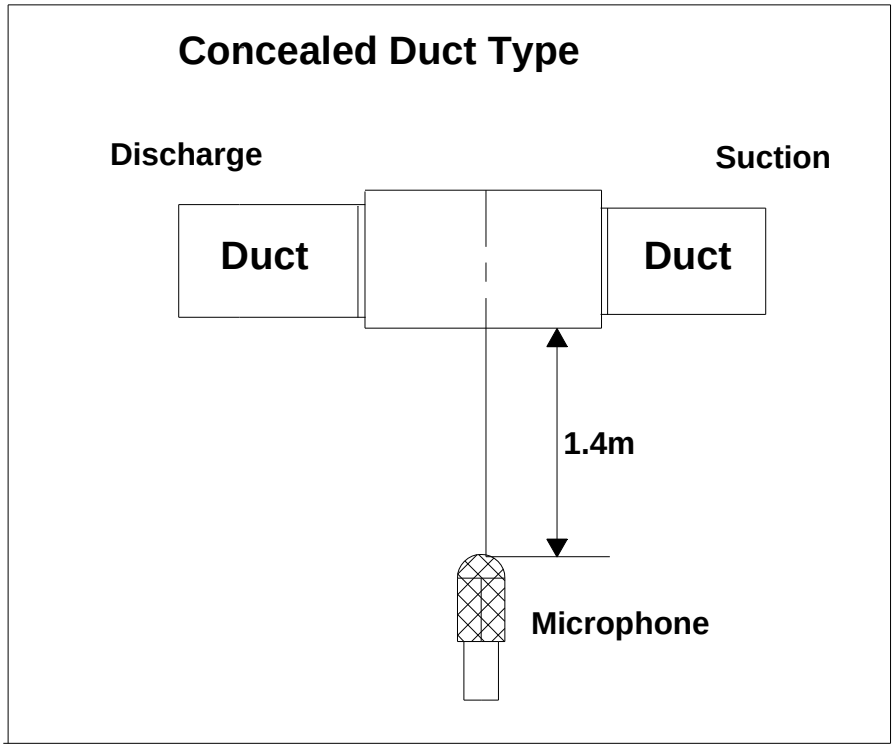


6. Electric Characteristics

Model	Indoor Unit				Power Supply
	Hz	Voltage	Min	Max	MFA
KPD-140 HN6	50	220-240V	198V	254V	16
KPD-176 HN6	50	220-240V	198V	254V	16

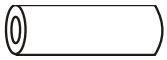
Note:
MFA: Max. Fuse Amps. (A)

7. Sound Levels



Model	Noise level dB(A)		
	H	M	L
KPD-140 HN6	49	45	40
KPD-176 HN6	49	45	40

8. Accessories

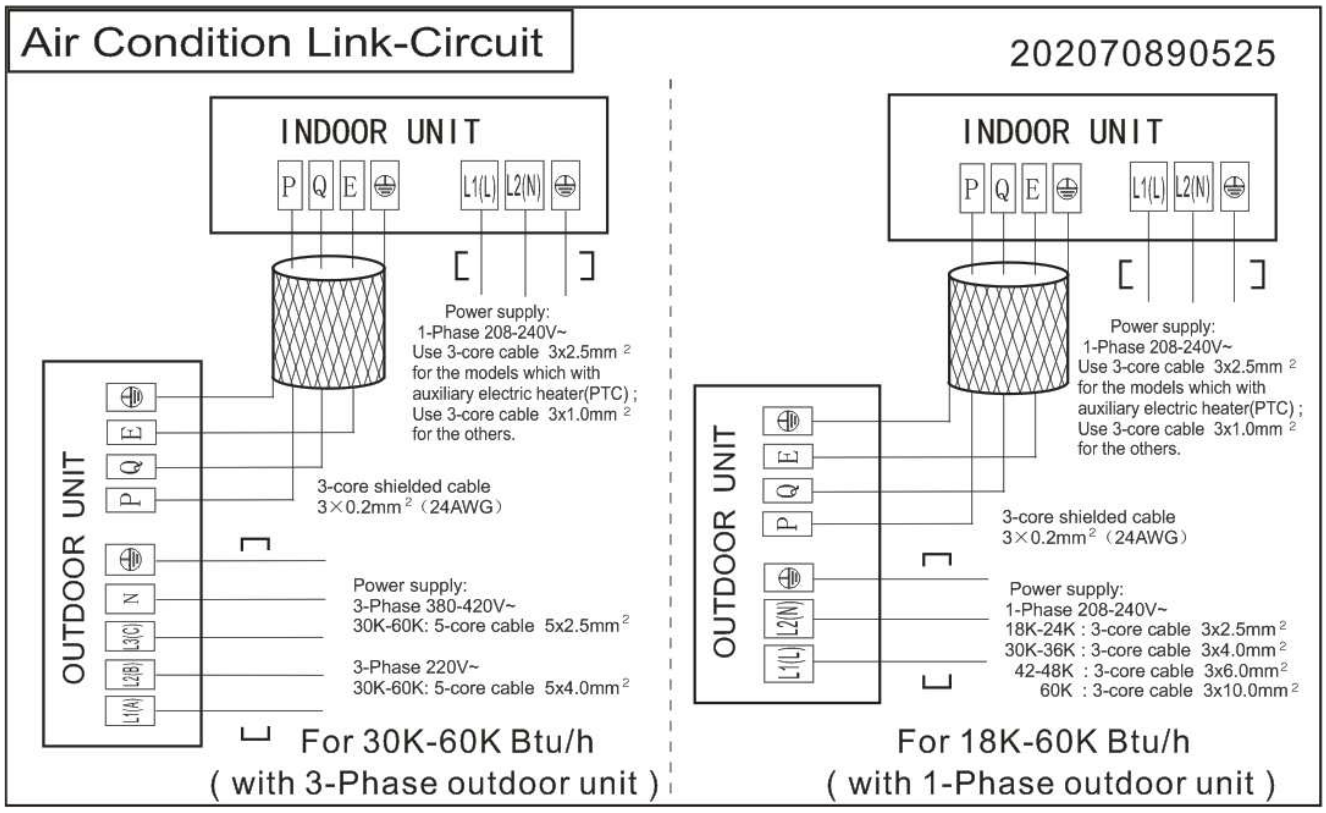
	Name	Shape	Quantity
Tubing & Fittings	Soundproof/insulation sheath		2
	Binding tape		1
	Seal sponge		1
Drainpipe Fittings	Drain joint		1
	Seal ring		1
Wire controller	Wire controller	———	1
others	Owner's manual	———	1
	Installation manual	———	1

9. The Specification of Power

Model		KPD-140 HN6 KPD-176 HN6
INDOOR UNIT POWER	Phase	1-phase
	Frequency and Voltage	220-240V, 50Hz
	POWER WIRING (mm^2)	3×1.0
	Circuit Breaker/ Fuse (A)	20/16
OUTDOOR UNIT POWER	Phase	3-phase
	Frequency and Voltage	380-415V, 50Hz
	POWER WIRING (mm^2)	5×2.5
	Circuit Breaker/ Fuse (A)	25/20
Indoor/Outdoor Connecting Wiring (Weak Electric Signal) (mm^2)		3×0.2
Indoor/Outdoor Connecting Wiring (Strong Electric Signal) (mm^2)		———

10. Field Wiring

KPD-140 HN6、KPD-176 HN6



Art Flux Super-slim Cassette Type

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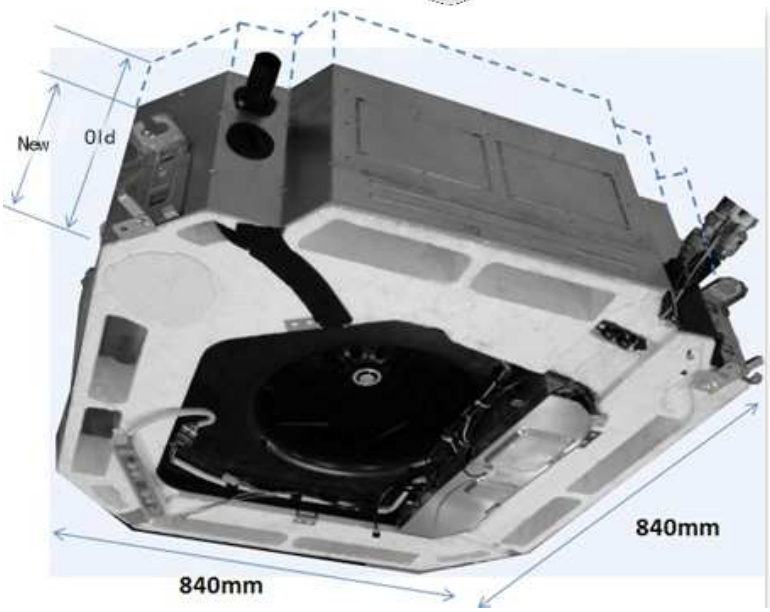
1. Features

1.1 Overview

- Compact design, super slim body size, less space requiring in installation
- Each louver can be separately controlled, more comfort air blowing is possible.
- Auto-lifting panel design, more convenient to clean and maintain the filter. (optional)



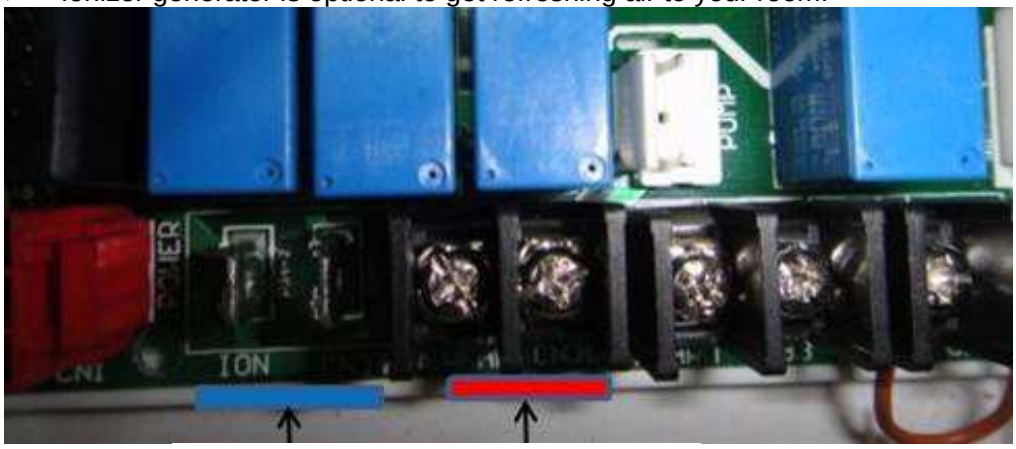
	Old Cassette	New Slim Cassette	Reduction
18K-24K	840*230*840	840*205*840	11%↓
30K	840*300*840	840*205*840	32%↓
36K-48K	840*300*840	840*245*840	18%↓
60K	840*300*840	840*287*840	4%↓

1.2 Fresh air intake function

- Fresh air fulfills air quality more healthy and comfortable.
- Ventilation motor is optional to increase the effect of fresh air.

1.3 Optional ionizer generator

- Ionizer generator is optional to get refreshing air to your room.

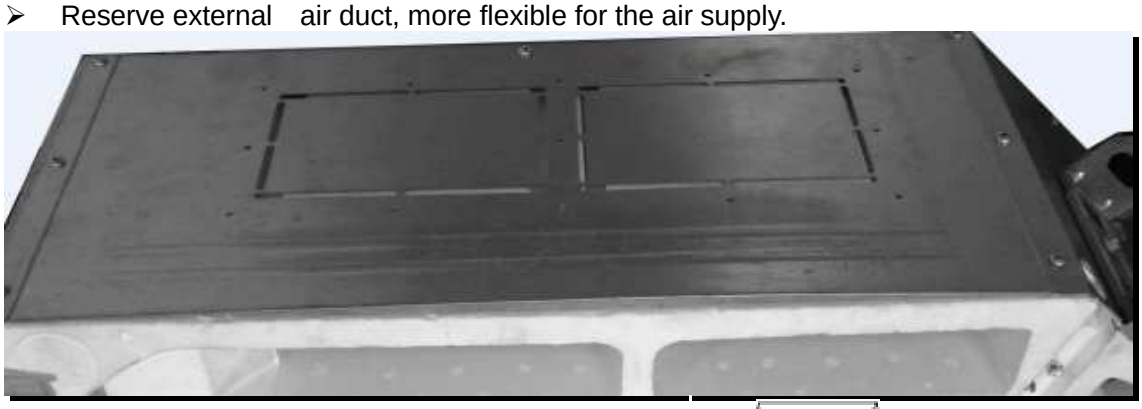


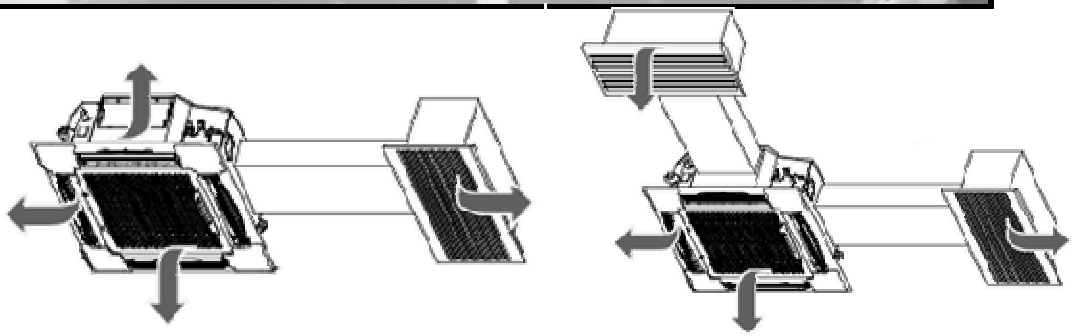
Ionizer generator connector Ventilation motor connector

- Ionizer can be switched on or off by remote controller.
  When pressing the Clean Air button on the remote controller, Ionizer will work and the indicator light on display board will shine.

1.4 External air duct design

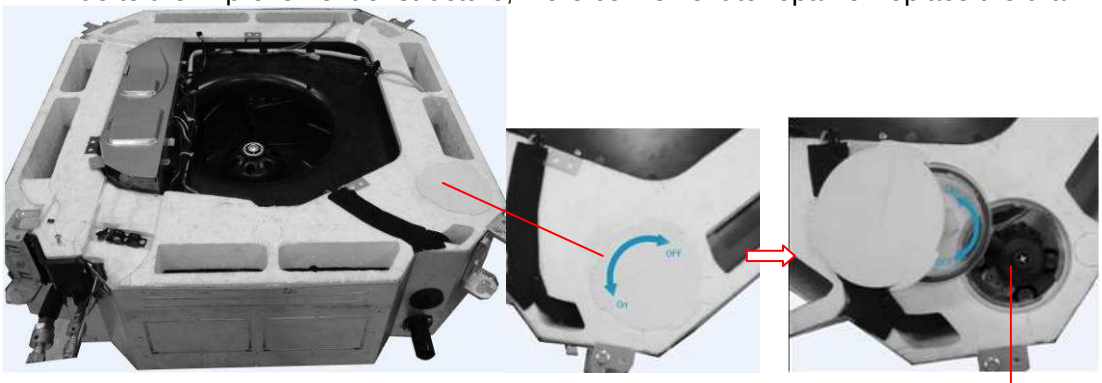
➢ Reserve external air duct, more flexible for the air supply.



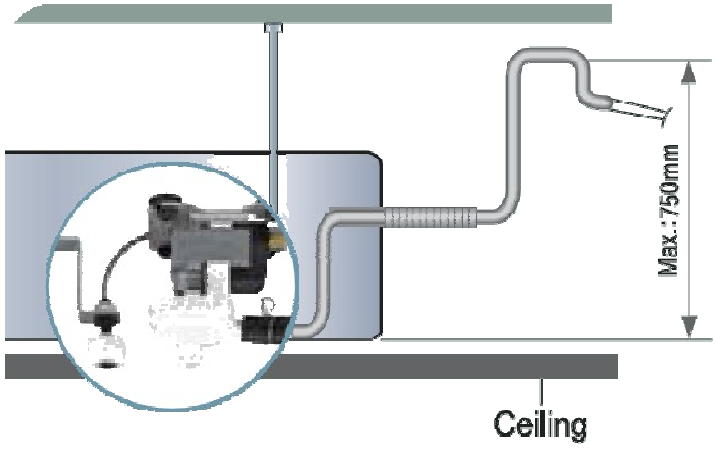


1.5 Built-in draining pump

➢ Due to the improvement of structure, more convenient to repair or replace the draining pump.

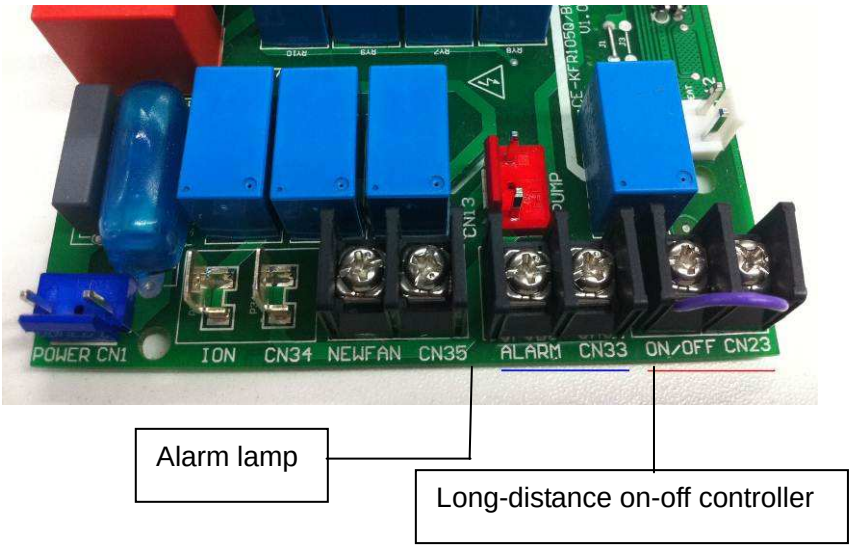


➢ Built-in draining pump to make sure condensed water drain out reliably.



1.6 Terminals for alarm lamp and long-distance on-off controller connection are standard

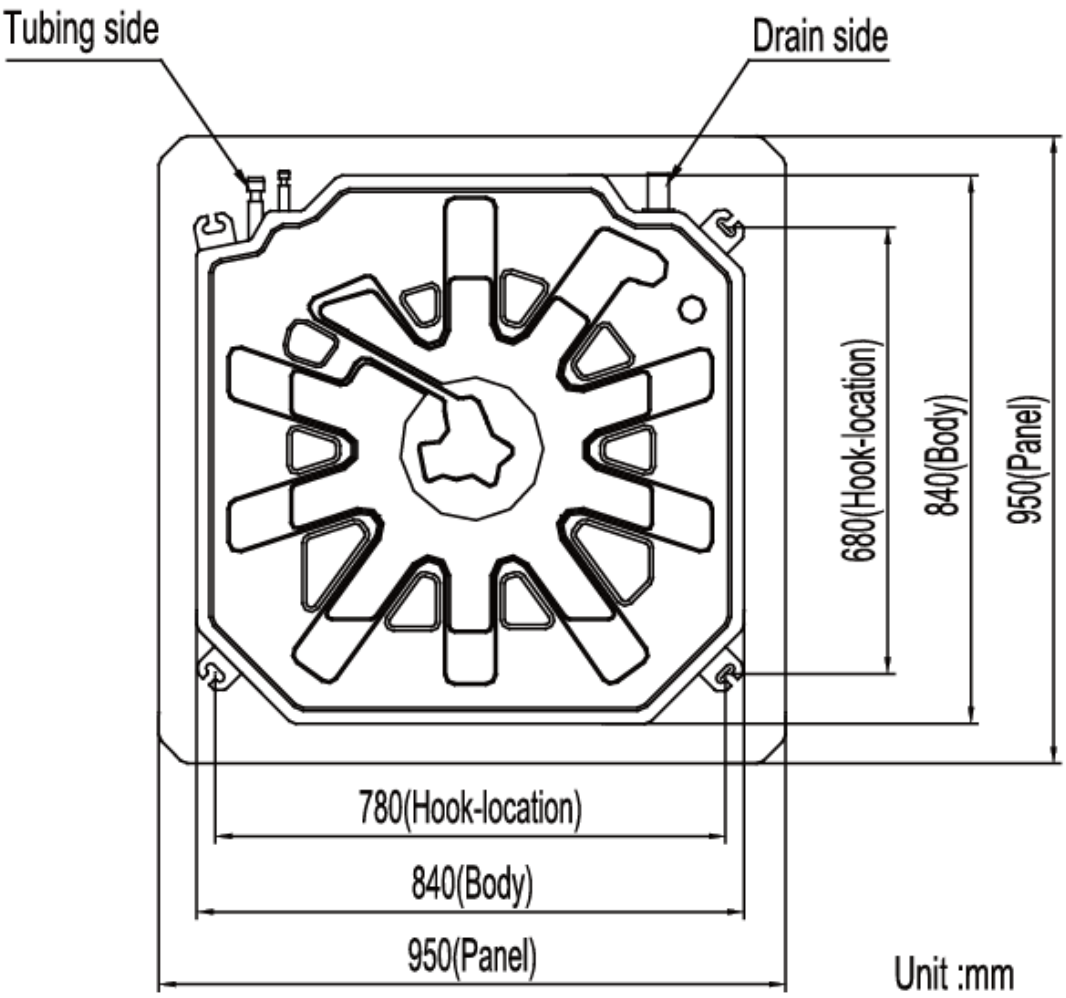
- Reserve terminals for the connection of alarm lamp and long-distance on-off controller, more human control.

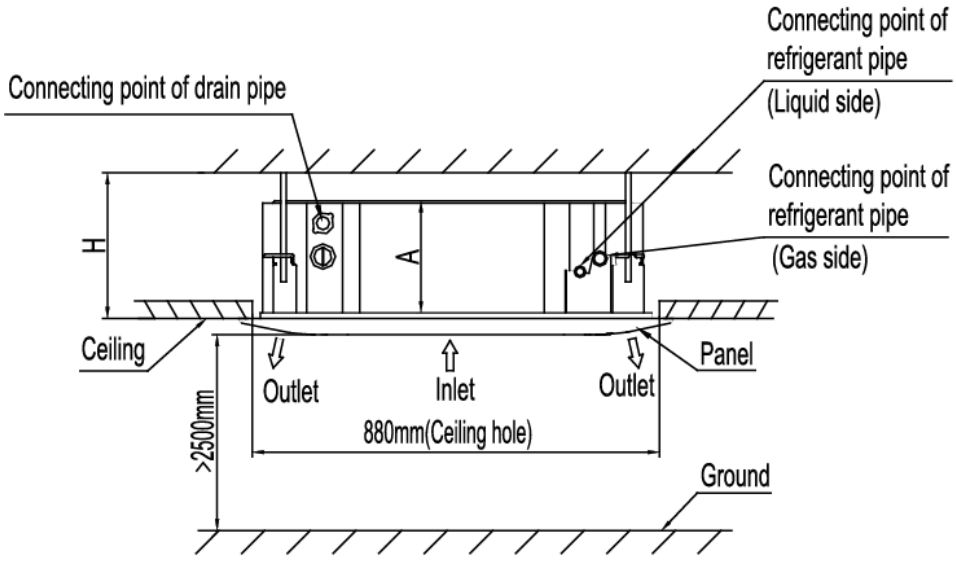


1.7 Optional touch screen wired controller

- Touch screen wired controller is optional, with error code indication function. Better man-machine conversation interface.
- Undated structure design, 4-way wire layout design, no raised part at backside, more convenient to place the wires and install the device.

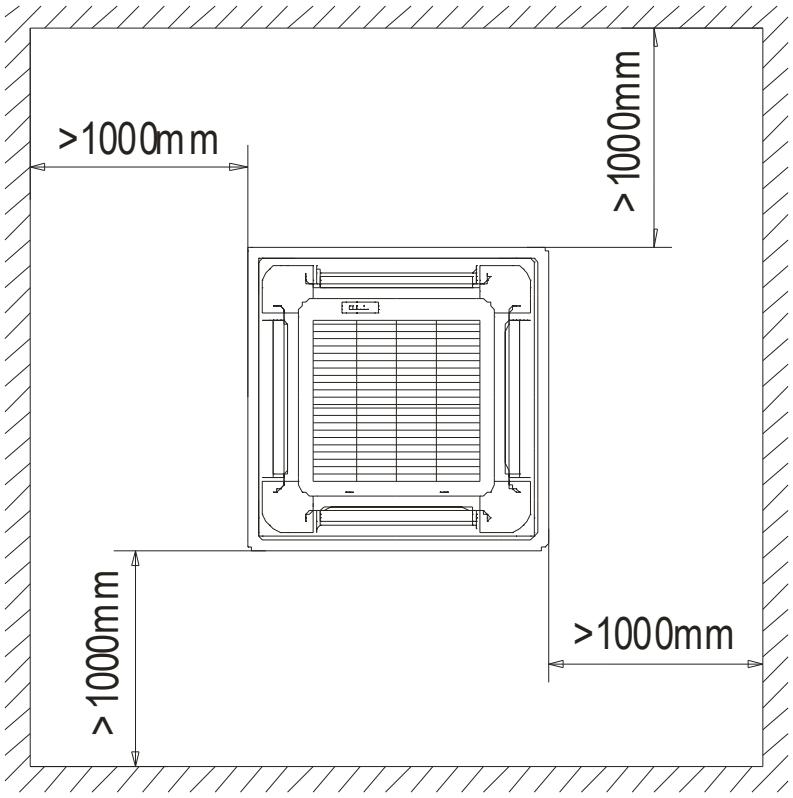
2. Dimensions





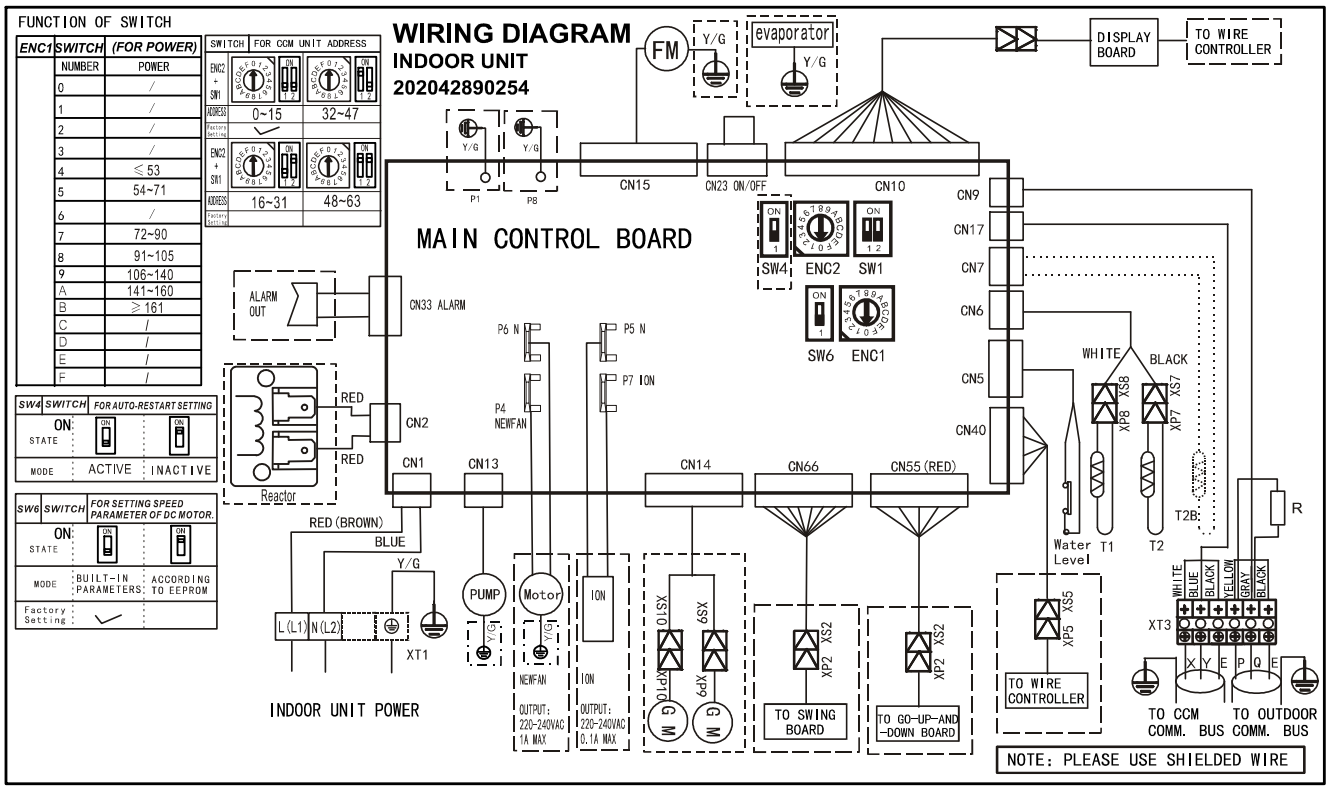
Model	A	H
KCIS-140 HN6	245	>275
KCIS-176 HN6	287	>317

3. Service Space



4. Wiring Diagrams

KCIS-140 HN6 KCIS-176 HN6

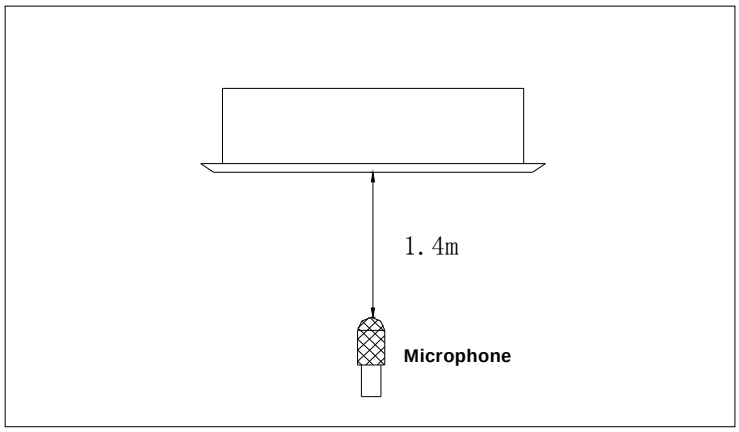


5. Electric Characteristics

Model	Indoor Unit				Power Supply
	Hz	Voltage	Min	Max	MFA
KCIS-140 HN6	50	220-240V	198V	254V	16
KCIS-176 HN6	50	220-240V	198V	254V	16

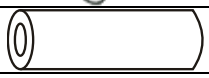
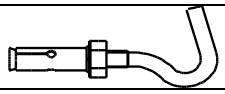
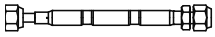
Note:
MFA: Max. Fuse Amps. (A)

6. Sound Levels



Model	Noise level dB(A)		
	H	M	L
KCIS-140 HN6	54	49	46
KCIS-176 HN6	55	50	47

7. Accessories

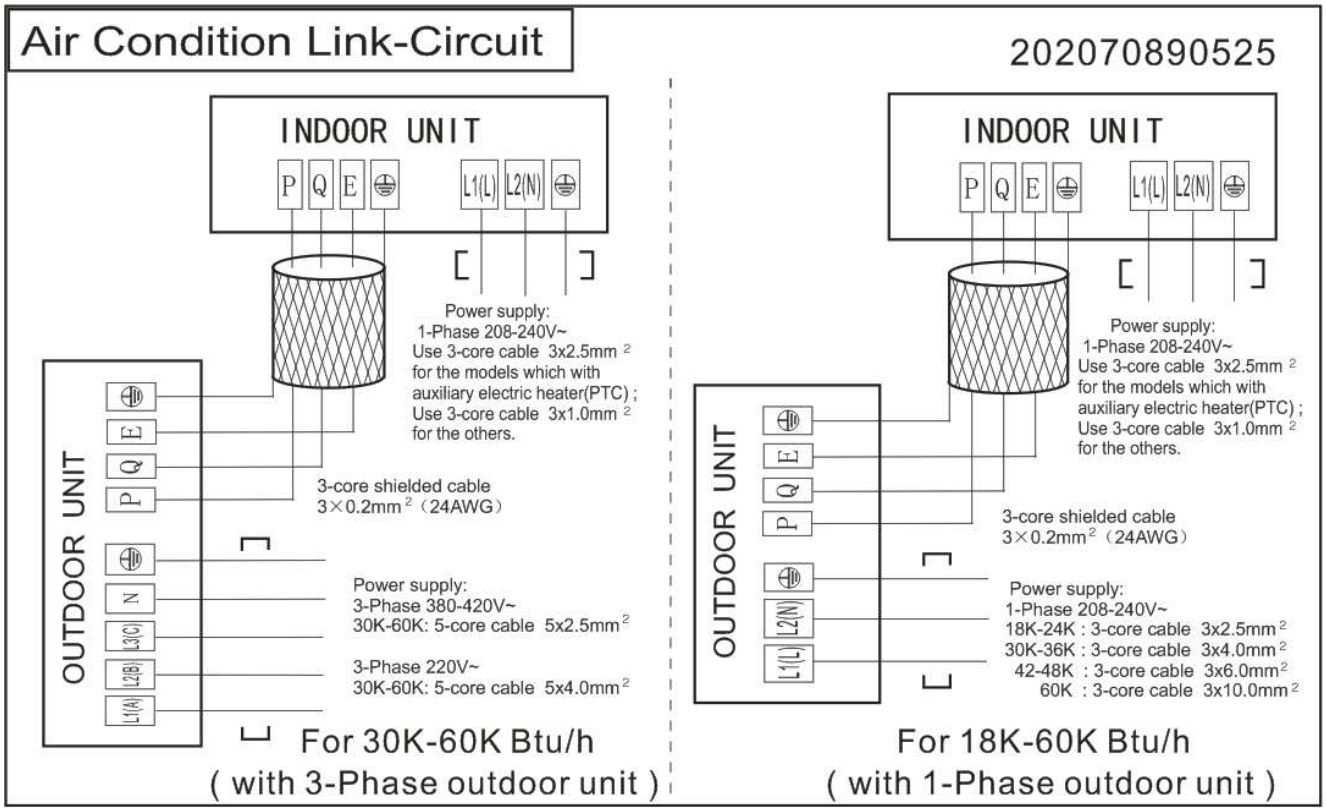
	Name	Shape	Quantity
INSTALLATION FITTINGS	Installation paper board		1
	Bolt M5		4
Tubing & Fittings	Soundproof / insulation sheath		2
Drainpipe Fittings	Out-let pipe		1
	Out-let pipe sheath		1
	Out-let pipe clasp		1
Remote controller & Its Frame	Remote controller & Its Frame		1
	Remote controller holder		1
	Mounting screw(ST2.9×10-C-H)		2
	Remote controller manual		1
	Alkaline dry batteries (AM4)		2
Others	Owner's manual		1
	Installation manual		1
	Network wires		1
Installation accessory (The product you have might not be provided the following accessories	Expansible hook		4
	Installation hook		4
	Orifice		1

8. The Specification of Power

Model		KCIS-140 HN6 KCIS-176 HN6
INDOOR UNIT POWER	Phase	1-phase
	Frequency and Voltage	220-240V, 50Hz
	POWER WIRING (mm^2)	3×1.0
	Circuit Breaker/ Fuse (A)	20/16
OUTDOOR UNIT POWER	Phase	3-phase
	Frequency and Voltage	380-415V, 50Hz
	POWER WIRING (mm^2)	5×2.5
	Circuit Breaker/ Fuse (A)	25/20
Indoor/Outdoor Connecting Wiring (Weak Electric Signal) (mm^2)		3×0.2
Indoor/Outdoor Connecting Wiring (Strong Electric Signal) (mm^2)		———

9. Field Wiring

KCIS-140 HN6 KCIS-176 HN6



Ceiling & Floor Type

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1. Features

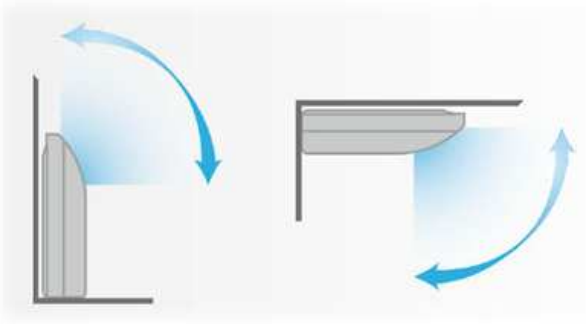
1.1. New design, more modern and elegant appearance.

1.2. Convenient installation

--The ceiling type can be easily installed into a corner of the ceiling even if the ceiling is very narrow
--It is especially useful when installation of an air conditioner in the center of the ceiling is impossible due to a structure such as one lighting.

1.3. Two direction auto swing (vertical & horizontal) and wide angle air flow,

--Air flow directional control minimizes the air resistance and produces wilder air flow to vertical direction.
--The range of horizontal air discharge is widened which secures wider air flow distribution to provide more comfortable air circulation no matter where the unit is set up



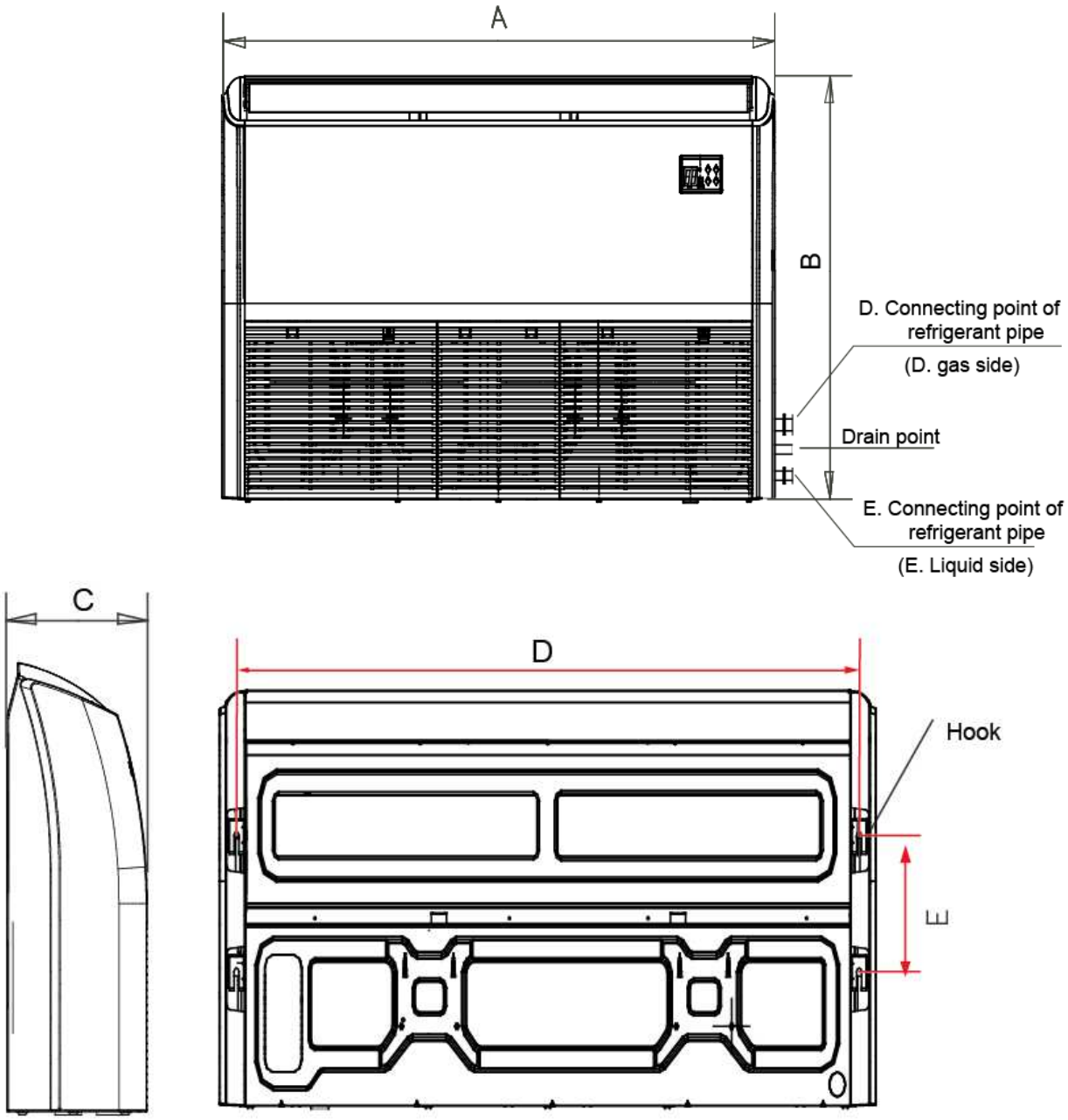
1.3. Three level fan speed, more humanism design, meets different air-supply requirement.

1.5. New foam drain pan with plastic-spraying inner surface

1.6. Easy operation.

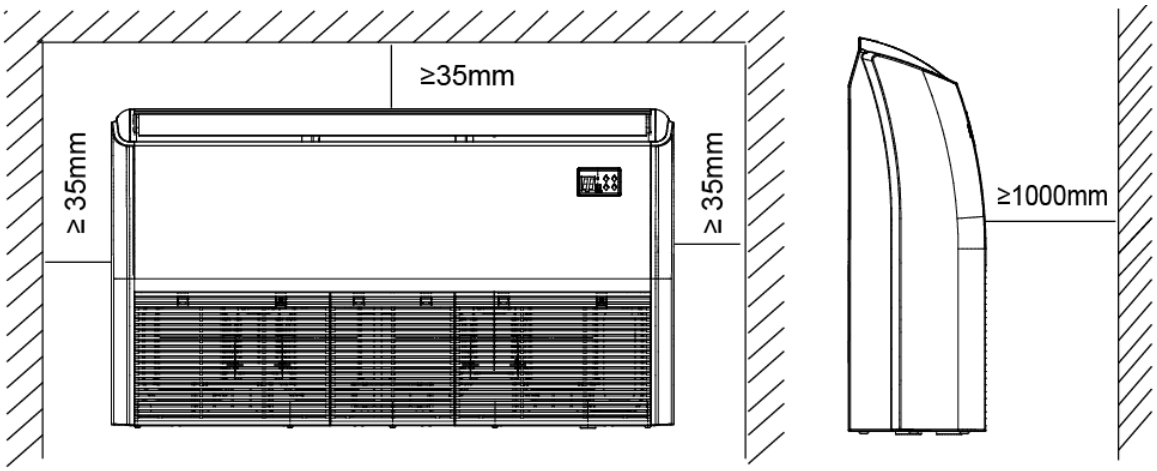
1.7. Remote control and optional wired control method.

2. Dimensions



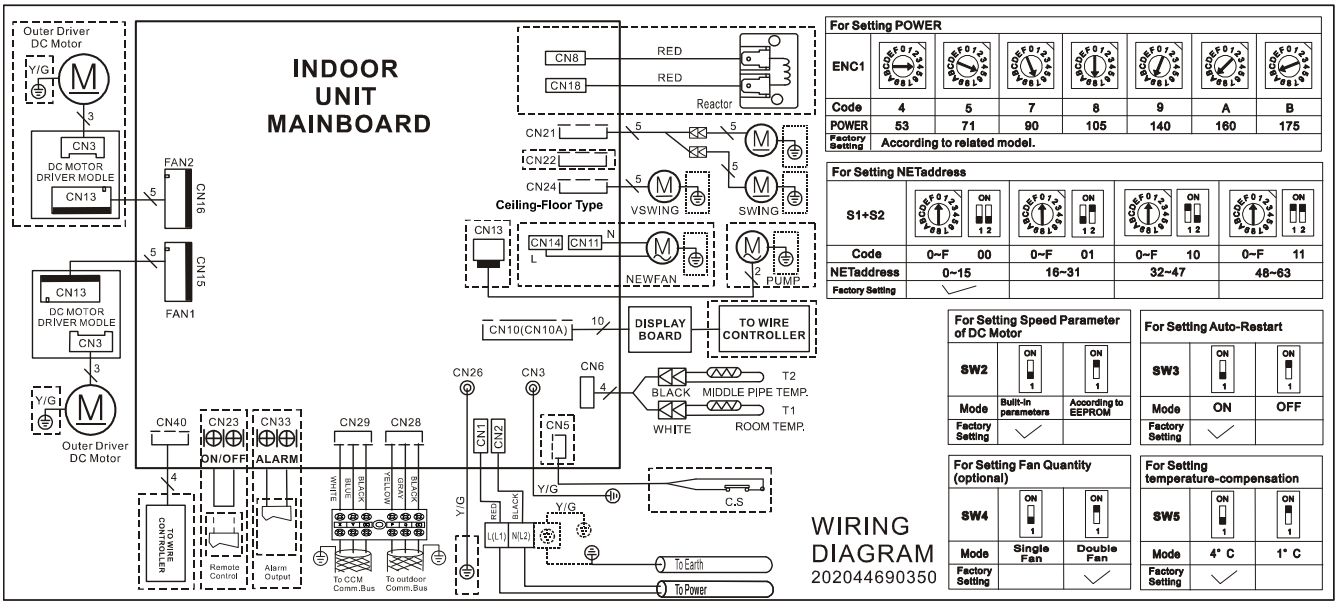
Capacity (Btu/h)	A	B	C	D	E
KPC-140 HN6	1285	675	235	1200	220
KPC-176 HN6	1650	675	235	1565	220

3. Service Space



4. Wiring Diagrams

KPC-140 HN6 KPC-176 HN6

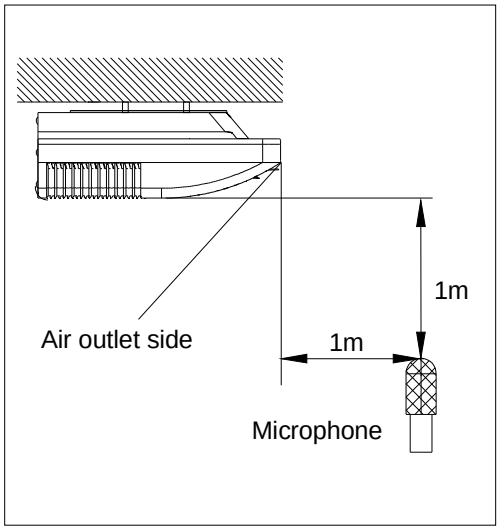


5. Electric Characteristics

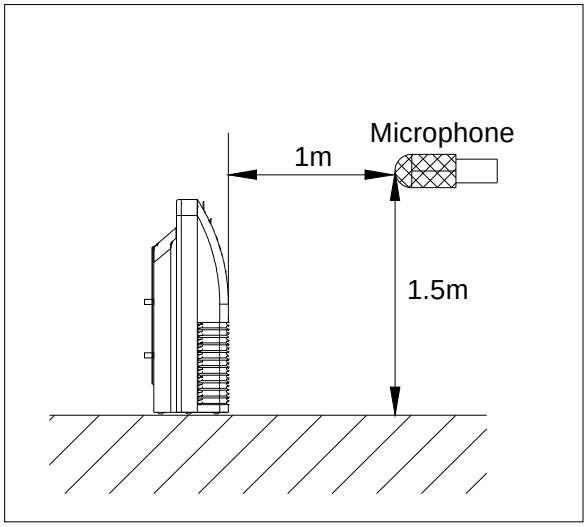
Model	Indoor Units				Power Supply
	Hz	Voltage	Min.	Max.	MFA
KPC-140 HN6	50	220-240V	198V	254V	16
KPC-176 HN6	50	220-240V	198V	254V	16

Remark:
MFA: Max. Fuse Amps. (A)

6. Sound Levels



Ceiling



Floor

Model	Noise level dB(A)		
	H	M	L
KPC-140 HN6	55	52	50
KPC-176 HN6	56	53	51

7. Accessories

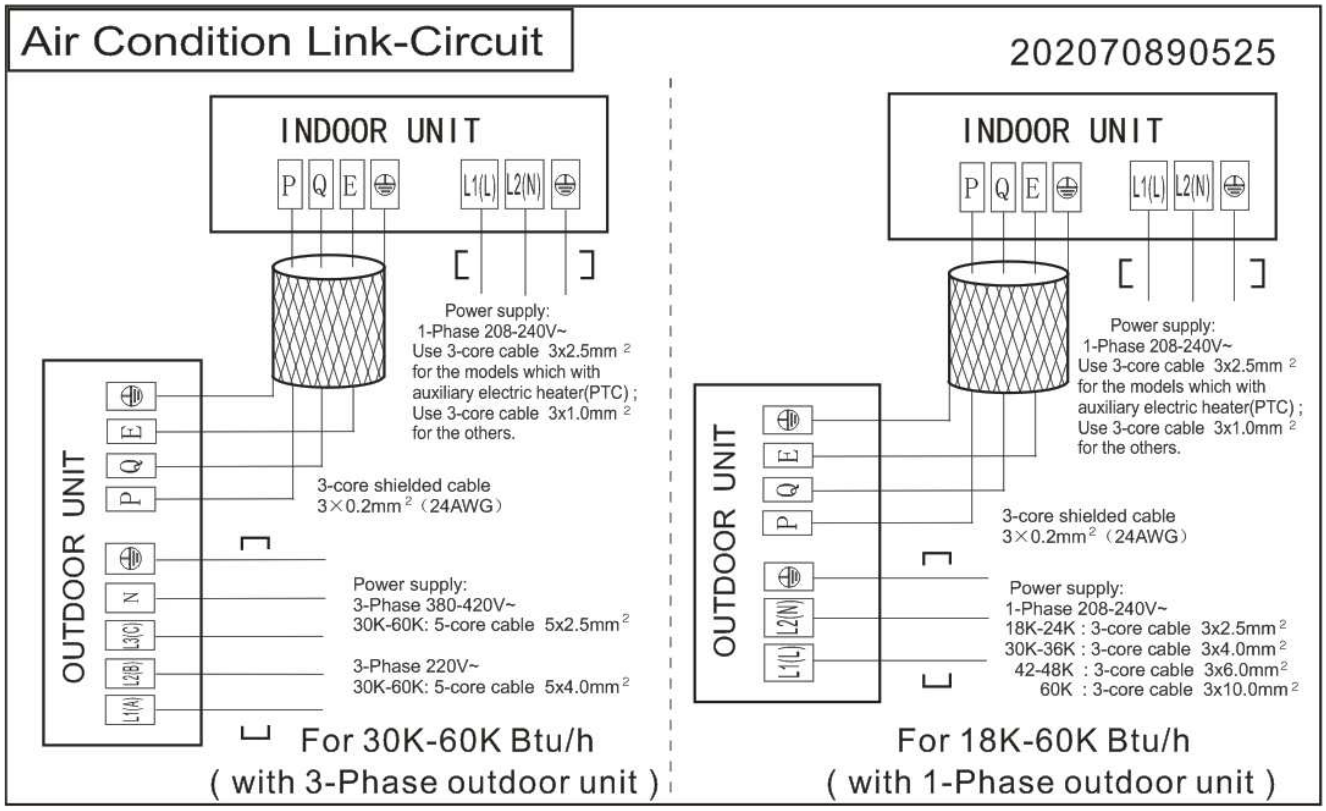
Remote controller & Its holder	1. Remote controller		1
	2. Remote controller holder		1
	3. Mounting screw (ST2.9×10-C-H)		2
	3. Alkaline dry batteries (AM4)		2
Others	5. Owner's manual	———	1
	6. Installation manual	———	1
	7. Remote controller manual	———	1

8. The Specification of Power

Model		KPC-140 HN6 KPC-176 HN6
INDOOR UNIT POWER	Phase	1-phase
	Frequency and Voltage	220-240V, 50Hz
	POWER WIRING (mm^2)	3×1.0
	Circuit Breaker/ Fuse (A)	20/16
OUTDOOR UNIT POWER	Phase	3-phase
	Frequency and Voltage	380-415V, 50Hz
	POWER WIRING (mm^2)	5×2.5
	Circuit Breaker/ Fuse (A)	25/20
Indoor/Outdoor Connecting Wiring (Weak Electric Signal) (mm^2)		3×0.2
Indoor/Outdoor Connecting Wiring (Strong Electric Signal) (mm^2)		———

9. Field Wiring

KPC-140 HN6 KPC-176 HN6



Part 3
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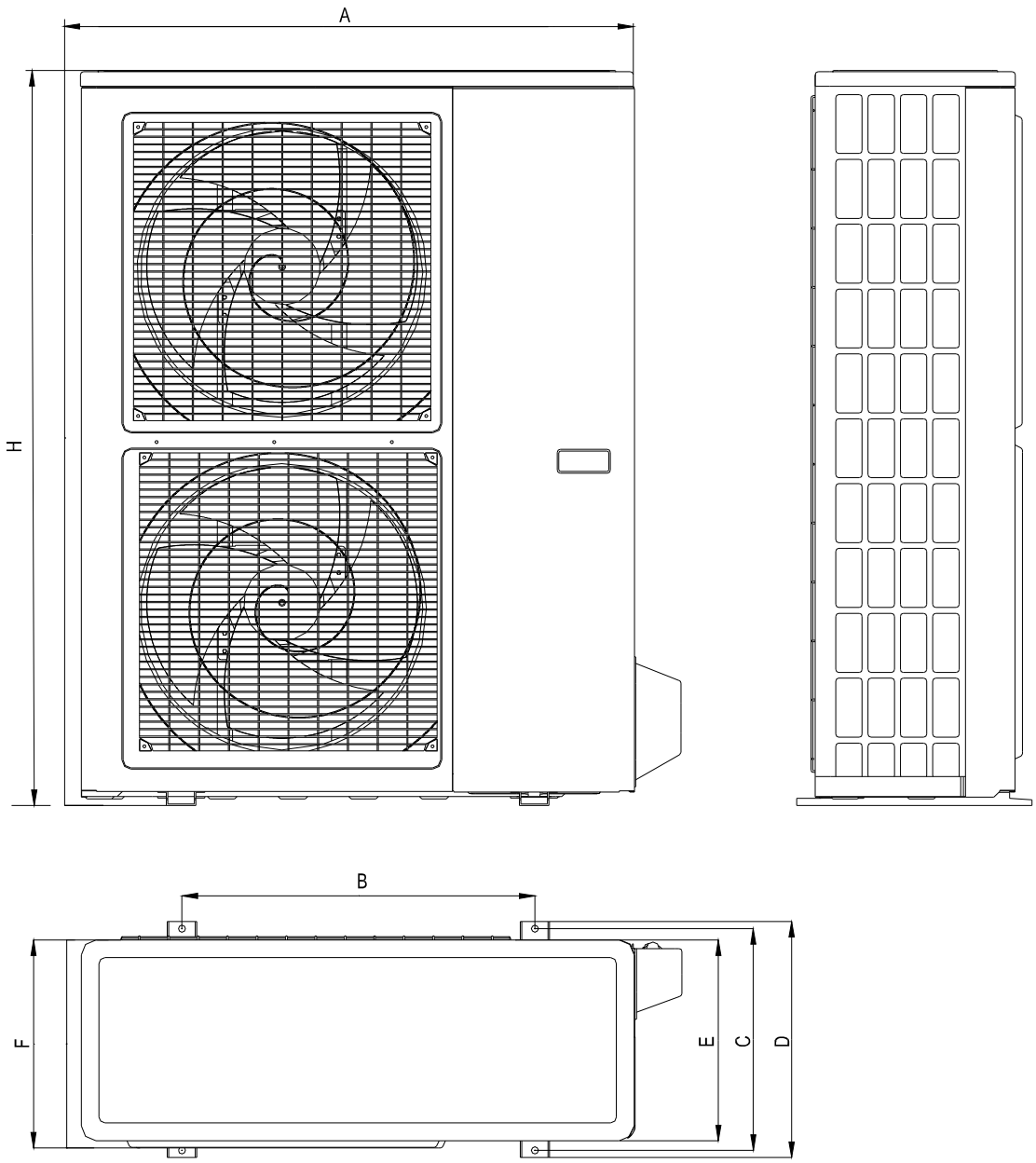
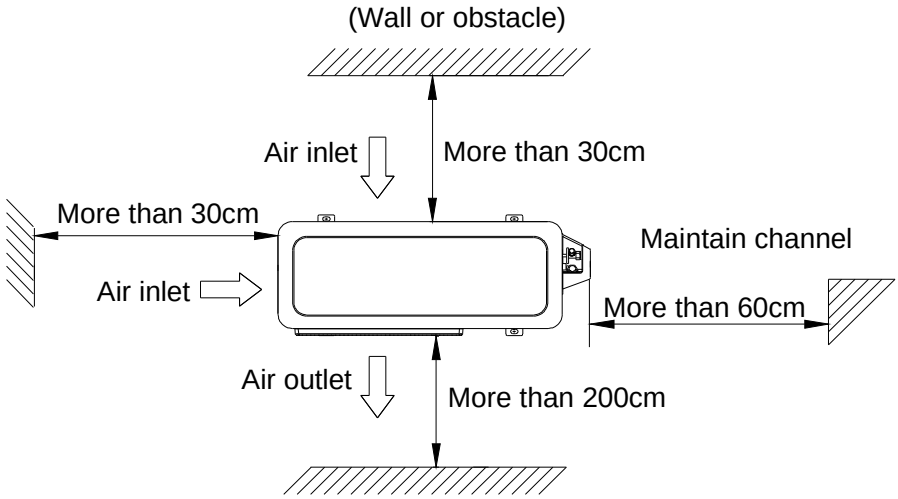
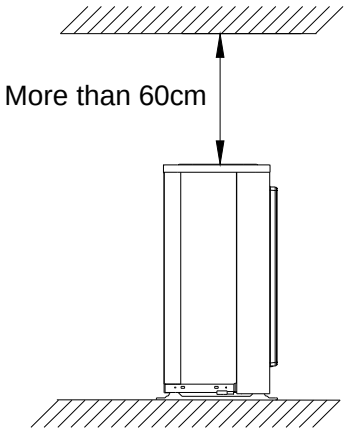
1. Dimensions



Model	Unit：mm						
	A	B	C	D	E	F	H
KUE-140 HTN6	938	633.5	404	448	370	392	1369
KUE-176 HTN6							

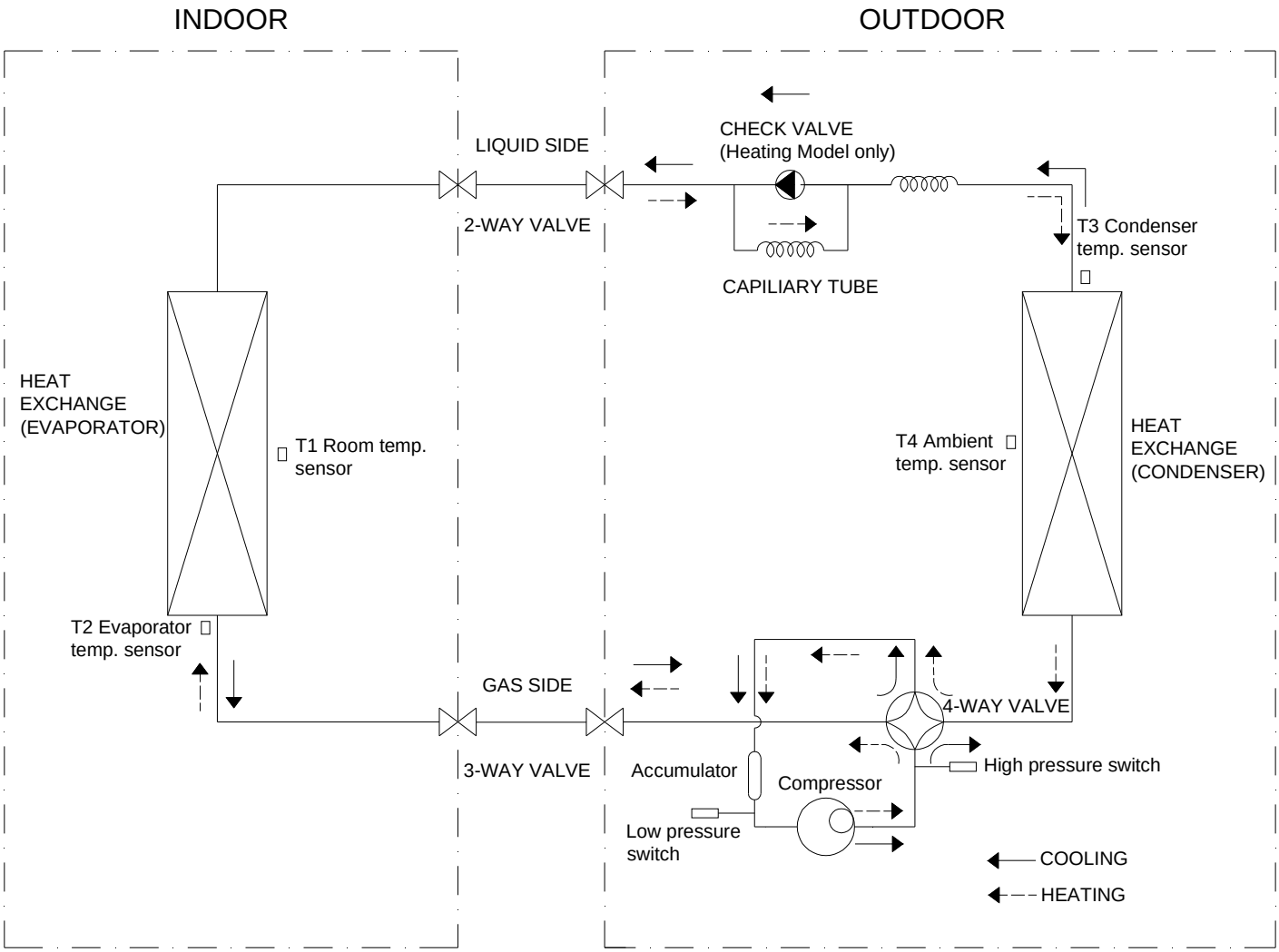
2. Service Space





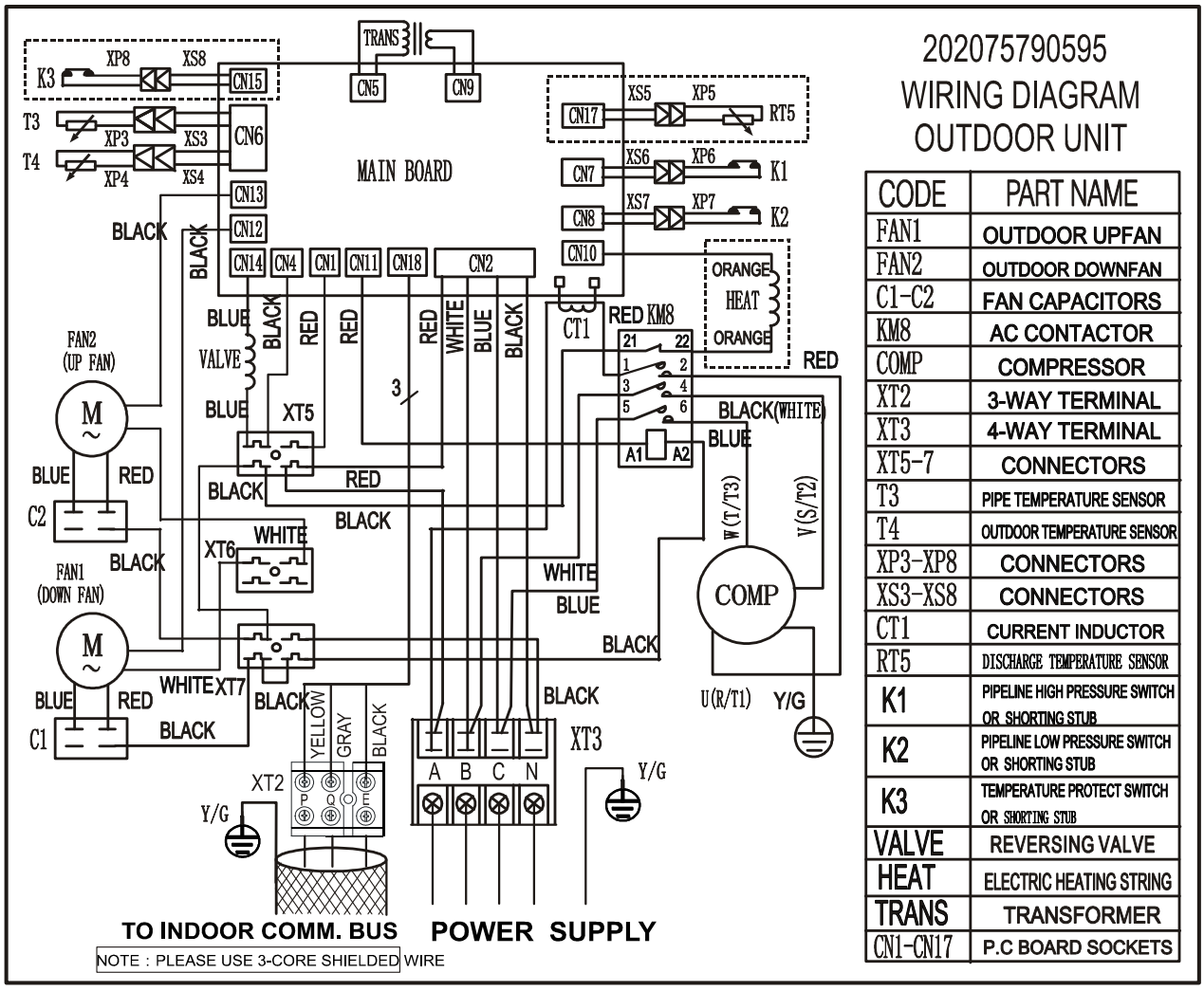
3. Piping Diagrams

KUE-140 HTN6、KUE-176 HTN6



4. Wiring Diagrams

KUE-140 HTN6、KUE-176 HTN6



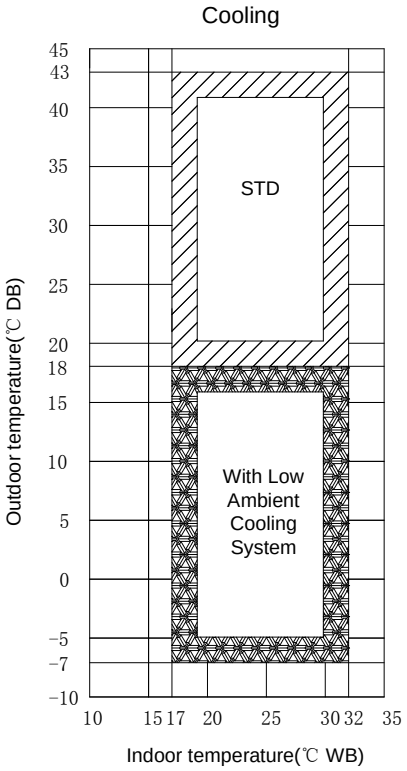
CODE	PART NAME
FAN1	OUTDOOR UPFAN
FAN2	OUTDOOR DOWNFAN
C1-C2	FAN CAPACITORS
KM8	AC CONTACTOR
COMP	COMPRESSOR
XT2	3-WAY TERMINAL
XT3	4-WAY TERMINAL
XT5-7	CONNECTORS
T3	PIPE TEMPERATURE SENSOR
T4	OUTDOOR TEMPERATURE SENSOR
XP3-XP8	CONNECTORS
XS3-XS8	CONNECTORS
CT1	CURRENT INDUCTOR
RT5	DISCHARGE TEMPERATURE SENSOR
K1	PIPELINE HIGH PRESSURE SWITCH OR SHORTING STUB
K2	PIPELINE LOW PRESSURE SWITCH OR SHORTING STUB
K3	TEMPERATURE PROTECT SWITCH OR SHORTING STUB
VALVE	REVERSING VALVE
HEAT	ELECTRIC HEATING STRING
TRANS	TRANSFORMER
CN1-CN17	P.C BOARD SOCKETS

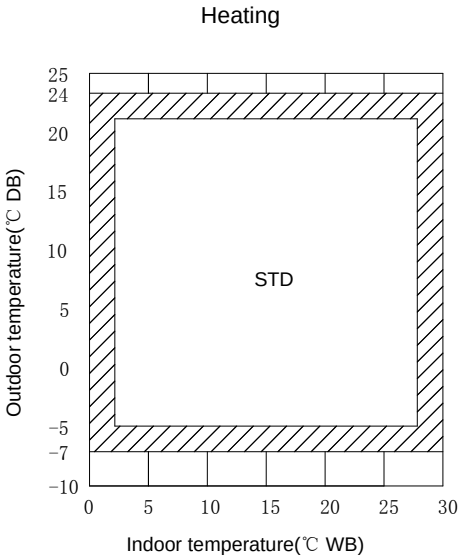
5. Electric Characteristics

Model	Outdoor Unit			
	Hz	Voltage	Min.	Max.
KUE-140 HTN6	50	380~415V	342V	435V
KUE-176 HTN6	50	380~415V	342V	435V

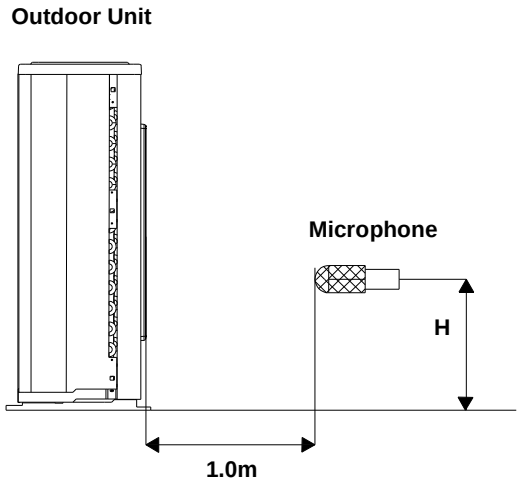
6. Operation Limits

Temperature / Mode	Cooling operation	Heating operation
Room temperature	17℃～32℃	0℃～30℃
Outdoor temperature	18℃～43℃ （-7℃～43℃：For the models with low temperature cooling system）	-7℃～24℃





7. Sound Levels



Note: H= 0.5 × height of outdoor unit

Model	Noise level dB(A)
KUE-140 HTN6	62
KUE-176 HTN6	63

Part 4
Installation

1. Installation Procedure.....49

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3. Indoor unit installation.....51

3. Outdoor unit installation (Side Discharge Unit).....61

5. Refrigerant pipe installation.....62

6. Drainage pipe installation.....63

7. Vacuum Drying and Leakage Checking.....67

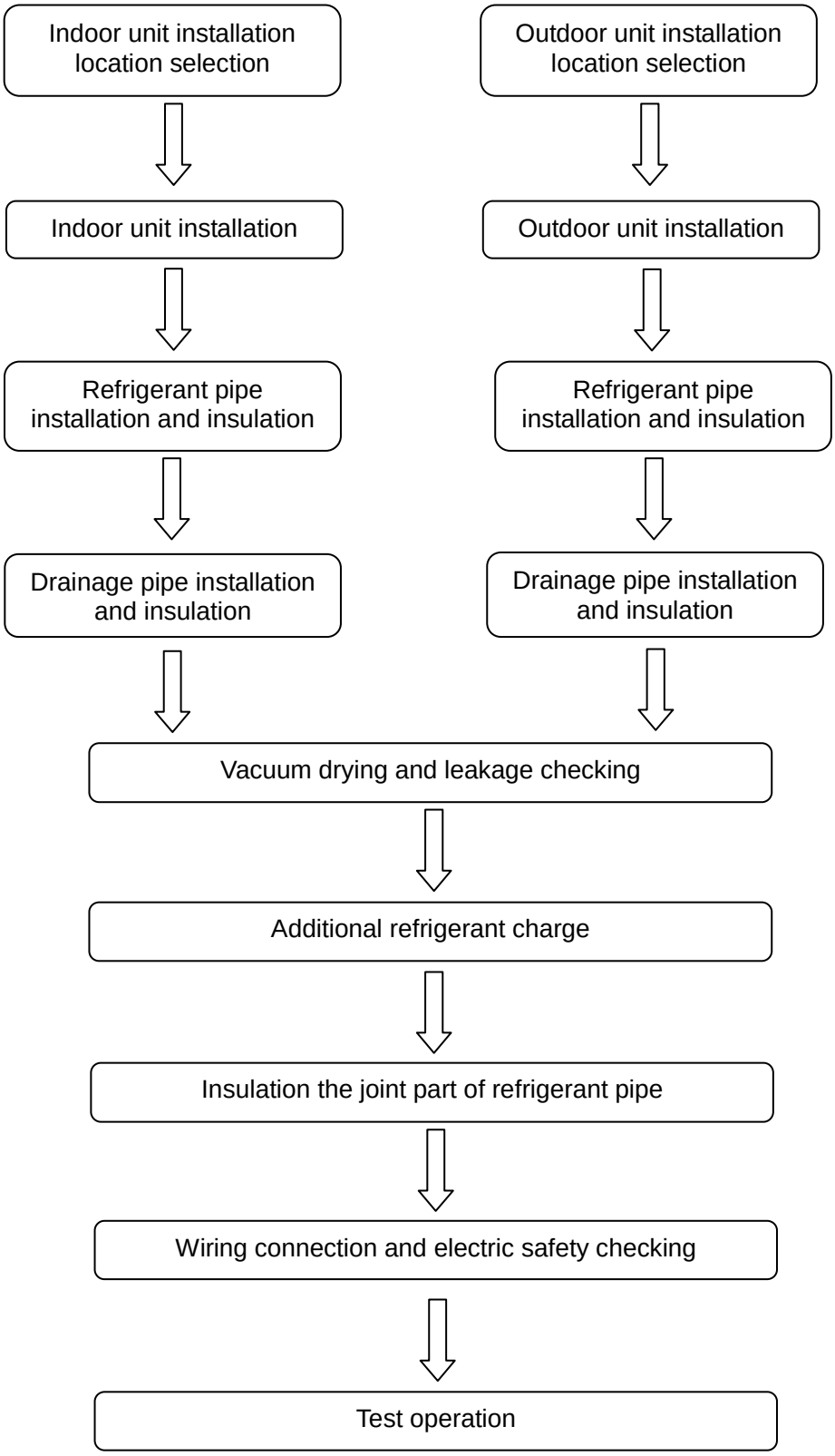
8. Additional refrigerant charge.....68

9. Engineering of insulation.....69

10. Engineering of electrical wiring.....70

11. Test operation.....70

1. Installation Procedure


Indoor unit installation location selection
Outdoor unit installation location selection
Indoor unit installation
Outdoor unit installation
Refrigerant pipe installation and insulation
Refrigerant pipe installation and insulation
Drainage pipe installation and insulation
Drainage pipe installation and insulation
Vacuum drying and leakage checking
Additional refrigerant charge
Insulation the joint part of refrigerant pipe
Wiring connection and electric safety checking
Test operation

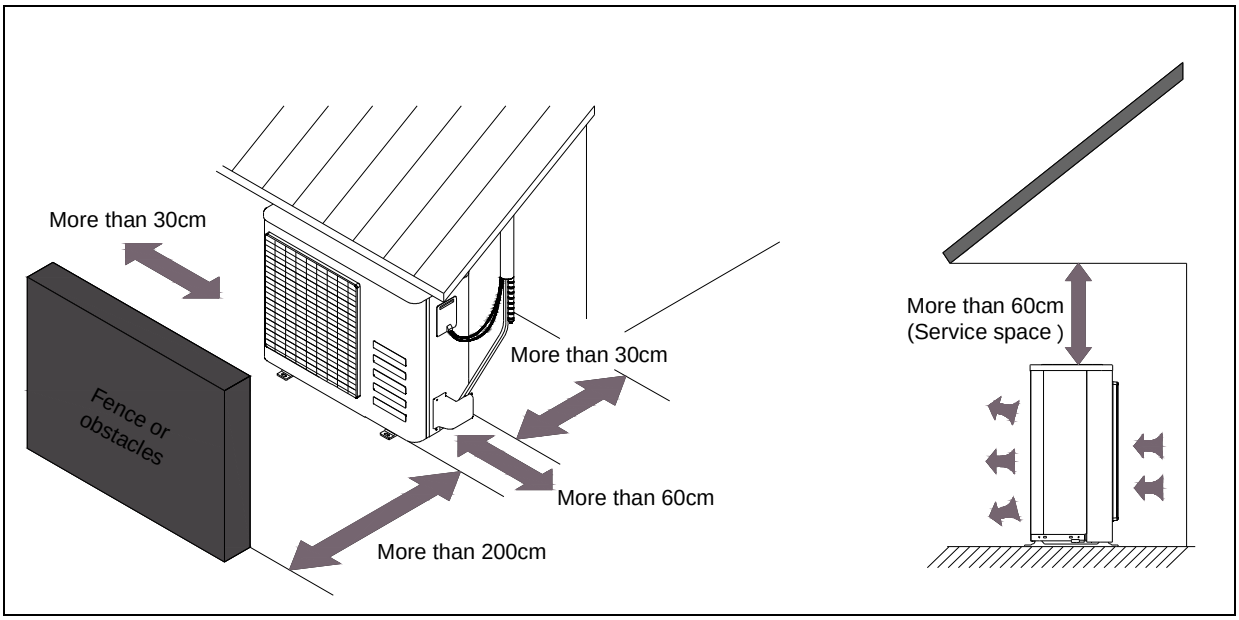
2. Location selection

2.1 Indoor unit location selection

- The place shall easily support the indoor unit's weight.
- The place can ensure the indoor unit installation and inspection.
- The place can ensure the indoor unit horizontally installed.
- The place shall allow easy water drainage.
- The place shall easily connect with the outdoor unit.
- The place where air circulation in the room should be good.
- There should not be any heat source or steam near the unit.
- There should not be any oil gas near the unit
- There should not be any corrosive gas near the unit
- There should not be any salty air neat the unit
- There should not be strong electromagnetic wave near the unit
- There should not be inflammable materials or gas near the unit
- There should not be strong voltage vibration.

2.2 Outdoor unit location selection

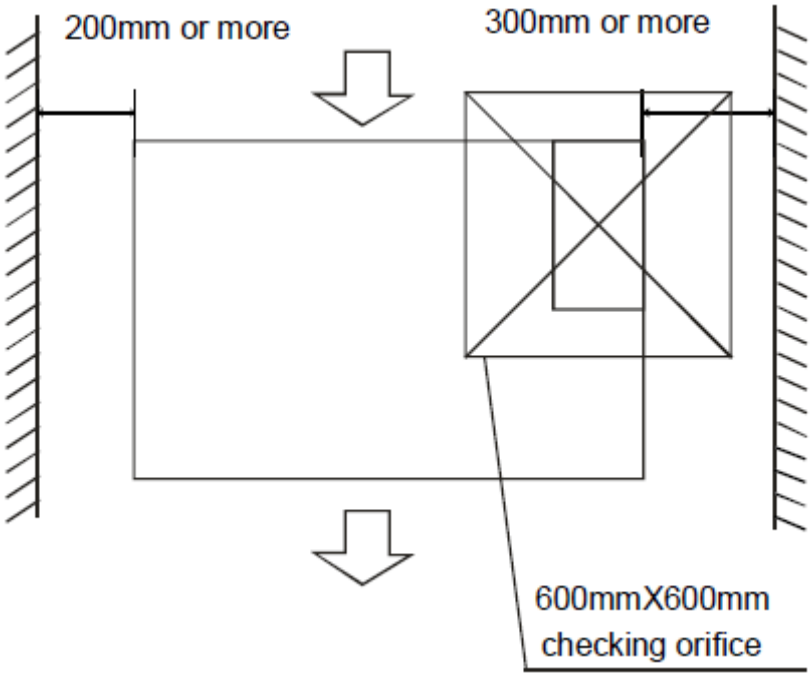
- The place shall easily support the outdoor unit's weight.
- Locate the outdoor unit as close to indoor unit as possible
- The piping length and height drop can not exceed the allowable value.
- The place where the noise, vibration and outlet air do not disturb the neighbors.
- There is enough room for installation and maintenance.
- The air outlet and the air inlet are not impeded, and not face the strong wind.
- It is easy to install the connecting pipes and cables.
- There is no danger of fire due to leakage of inflammable gas.
- It should be a dry and well ventilation place
- The support should be flat and horizontal
- Do not install the outdoor unit in a dirty or severely polluted place, so as to avoid blockage of the heat exchanger in the outdoor unit.
- If is built over the unit to prevent direct sunlight, rain exposure, direct strong wend, snow and other scraps accumulation, make sure that heat radiation from the condenser is not restricted.



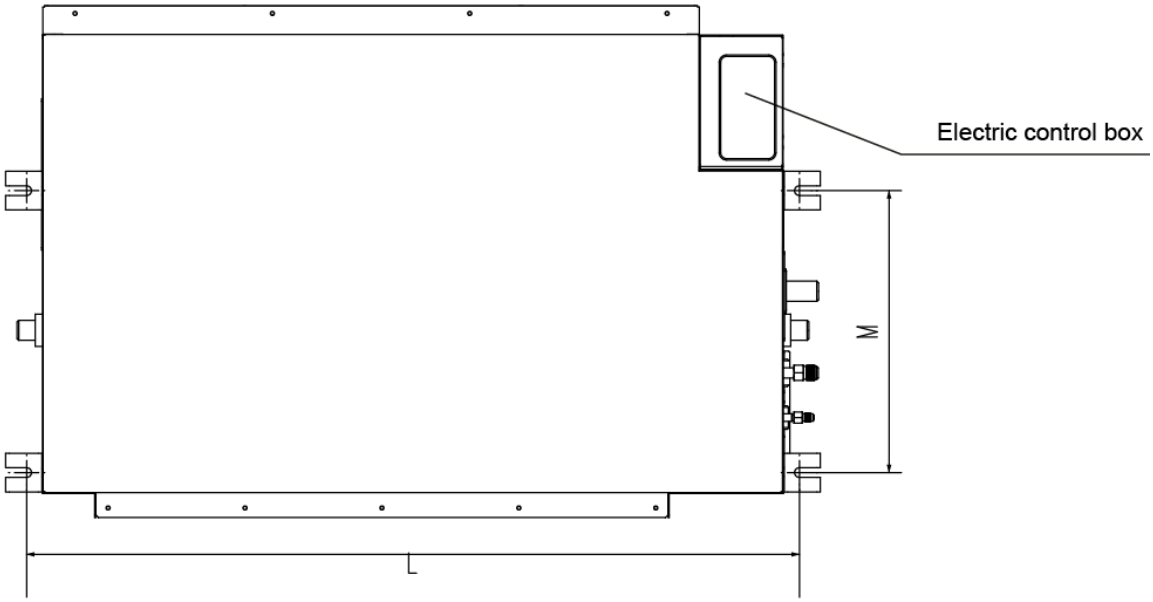
3. Indoor unit installation

3.1 Duct indoor unit installation

3.1.1 Service space for indoor unit



3.1.2 Bolt pitch



Capacity (KBtu)	Size of outline dimension mounted plug	
	L	M
45~60	1240	500

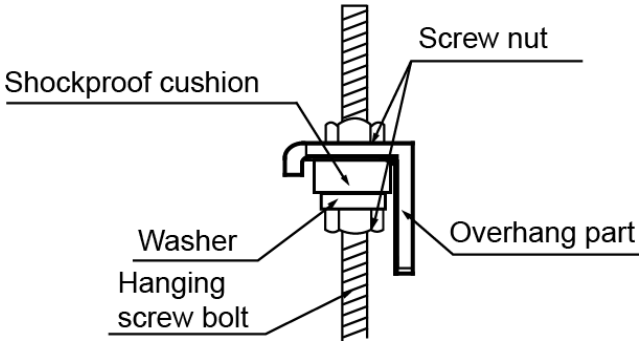
3.1.3 Install the pendant bolt

Select the position of installation hooks according to the hook holes positions showed in upper picture.

Drill four holes of Ø12mm, 45~50mm deep at the selected positions on the ceiling. Then embed the expansible hooks (fittings).

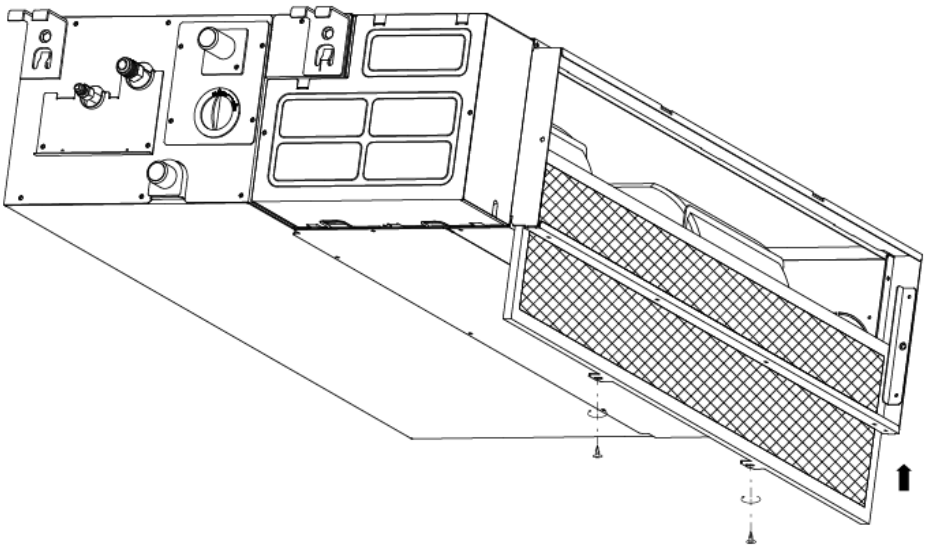
3.1.4 Install the main body

Make the 4 suspender through the 4 hanger of the main body to suspend it. Adjust the hexangular nuts on the four installation hooks evenly, to ensure the balance of the body. Use a leveling instrument to make sure the levelness of the main body is within ±1°.



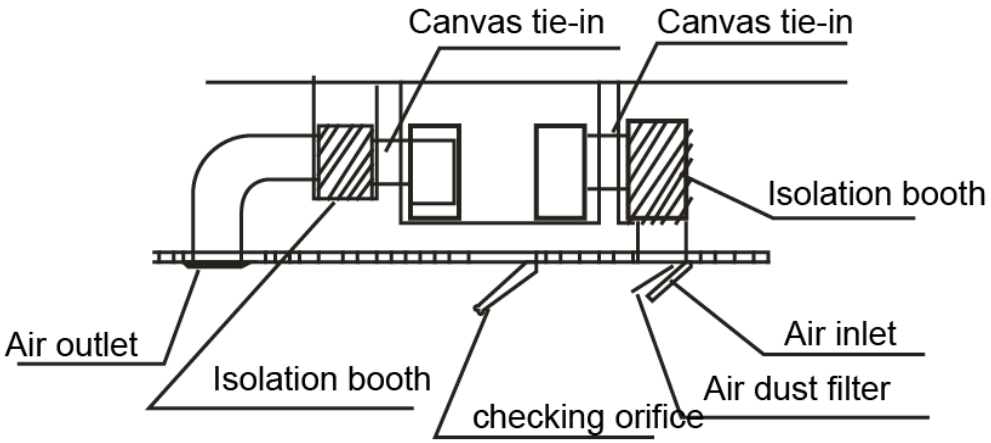
3.1.5 Install the air filter

Insert the air filter through the filter slot and fix it with 2 screws.



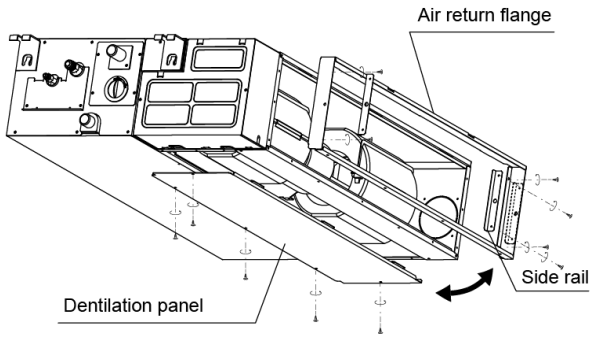
3.1.6 Install the air duct

Please design the air duct as below recommended picture

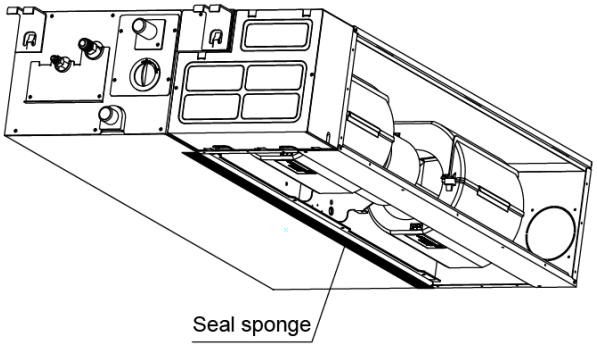


3.1.7 Change the air inlet direction

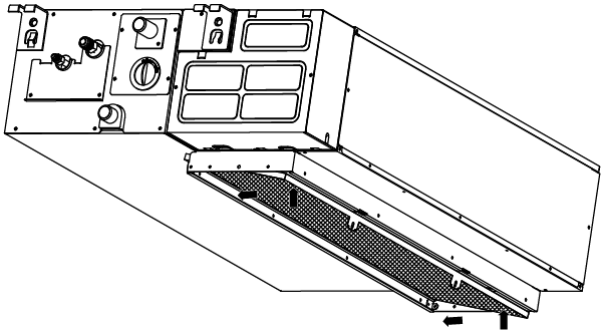
 Take off ventilation panel and flange, cut off the staples at side rail.



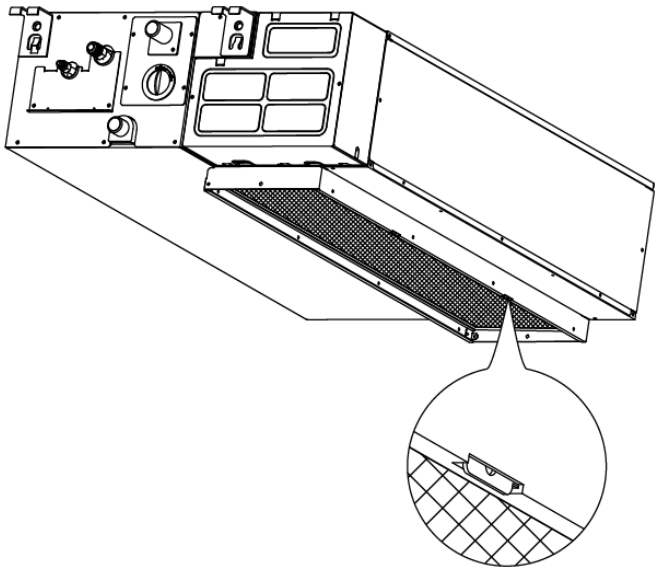
 Stick the attached seal sponge as per the indicating place in the following fig, and then change the mounting positions of air return panel and air return flange .



③ When install the filter mesh, please plug it into flange inclined from air return opening, and then push up.

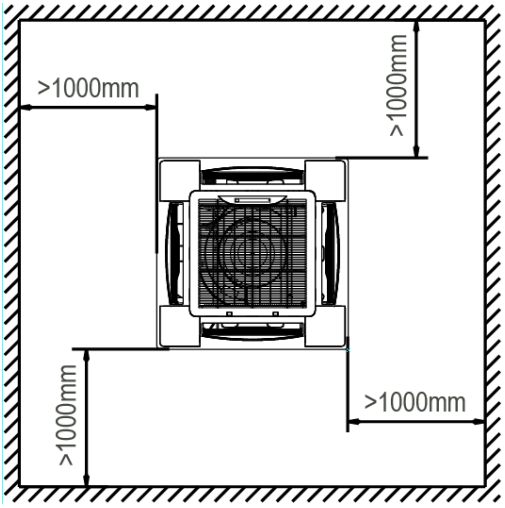


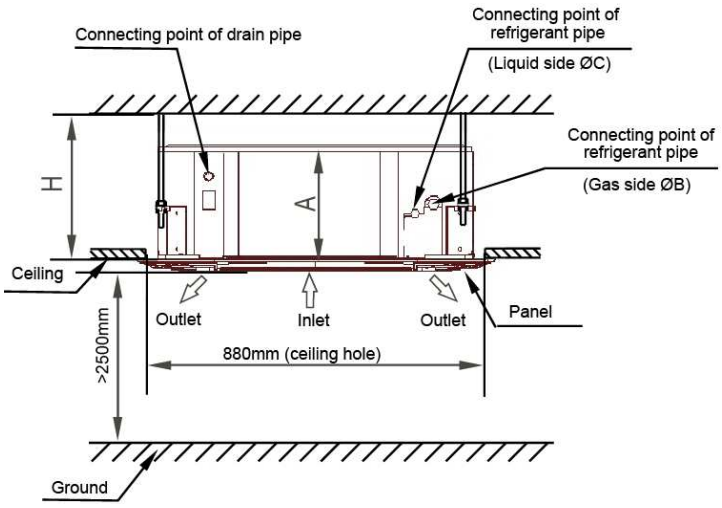
④ The installation has finish, upon filter mesh which fixing blocks have been insert to the flange positional holes.



3.3 Super-slim cassette indoor unit installation

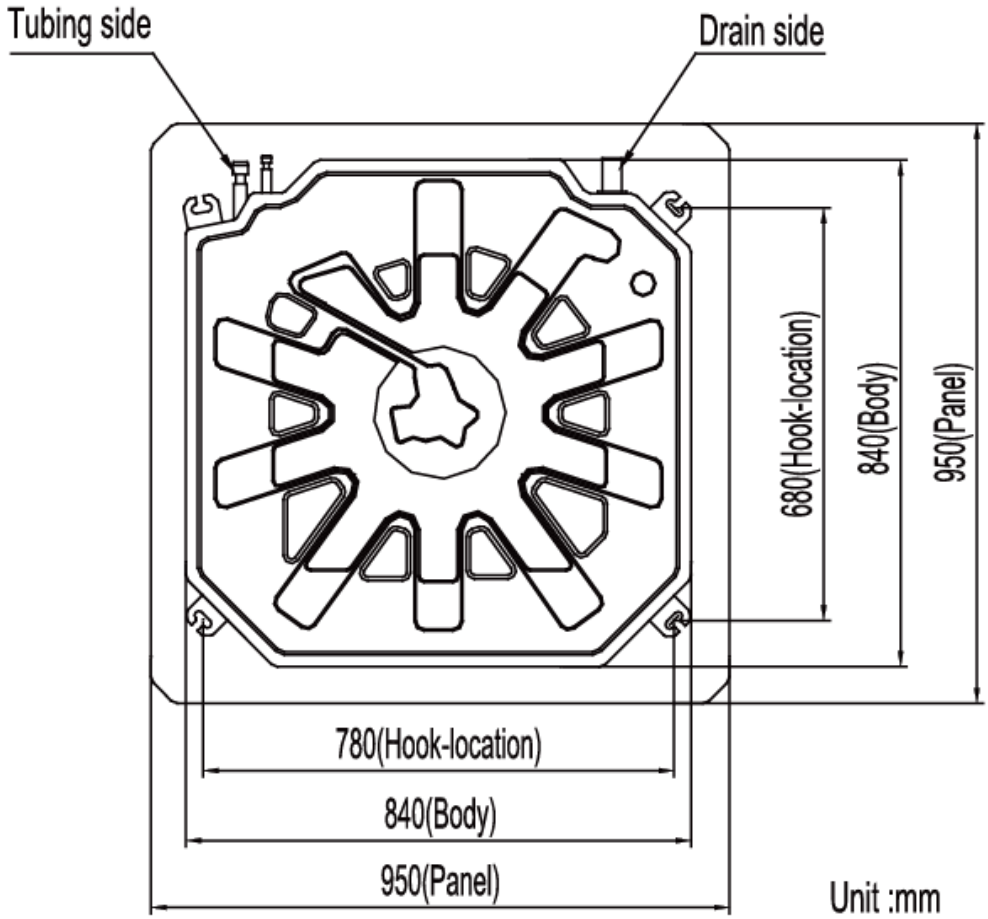
3.3.1 Service space for indoor unit





Model	A	H	Remark	
KCIS-140 HN6	245	>275	R410A and R22	Cooling / Cooling & Heating
KCIS-176 HN6	287	>317	R410A and R22	Cooling / Cooling & Heating

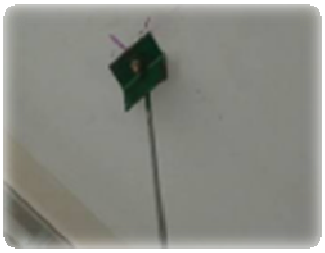
3.3.2 Bolt pitch



3.3.3 Install the pendant bolt

Select the position of installation hooks according to the hook holes positions showed in upper picture.

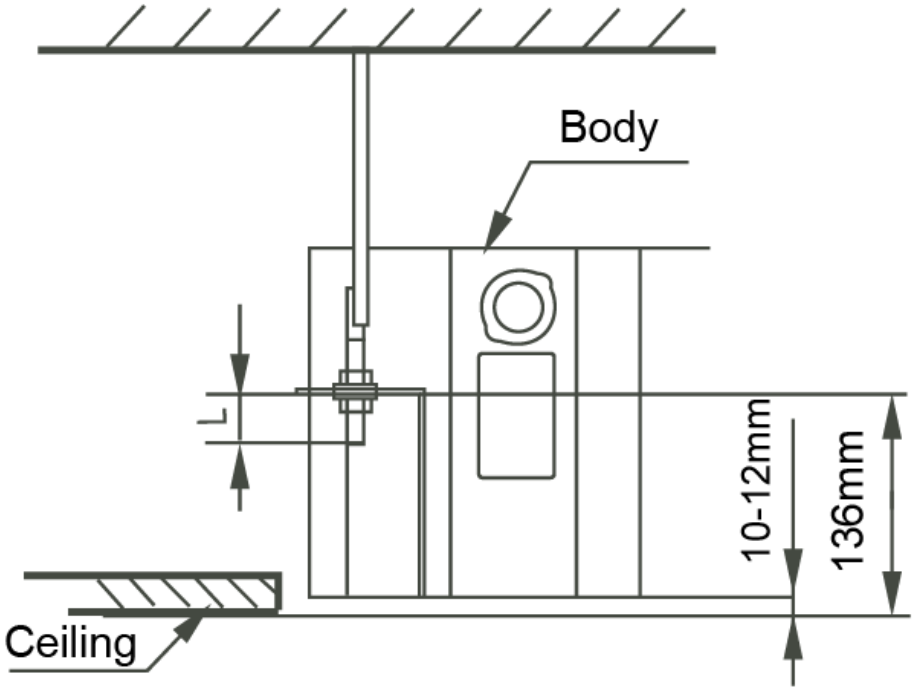
Drill four holes of Ø12mm, 45~50mm deep at the selected positions on the ceiling. Then embed the expansible hooks (fittings).



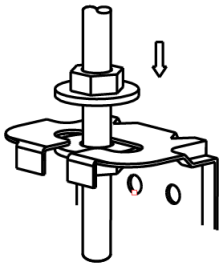
3.3.4 Install the main body

Make the 4 suspender through the 4 hanger of the main body to suspend it. Adjust the hexangular nuts on the four installation hooks evenly, to ensure the balance of the body. Use a leveling instrument to make sure the levelness of the main body is within ±1°.

Adjust the position to ensure the gaps between the body and the four sides of ceiling are even. The body's lower part should sink into the ceiling for 10~12 mm. In general, L is half of the screw length of the installation hook.

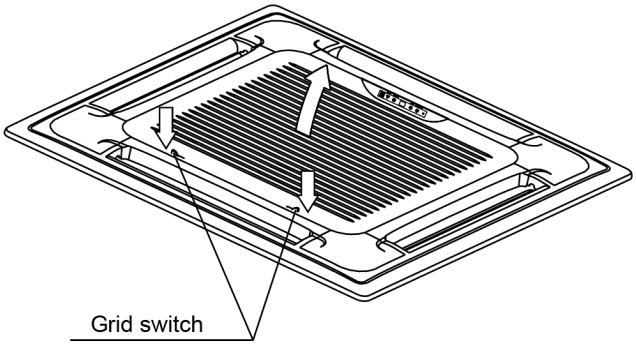


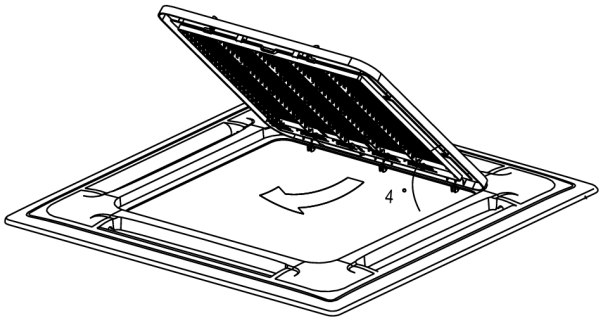
Locate the air conditioner firmly by wrenching the nuts after having adjusted the body's position well.



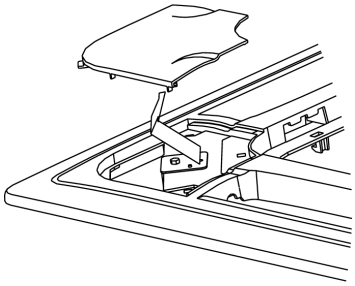
3.3.5 Install the panel

Remove the grille

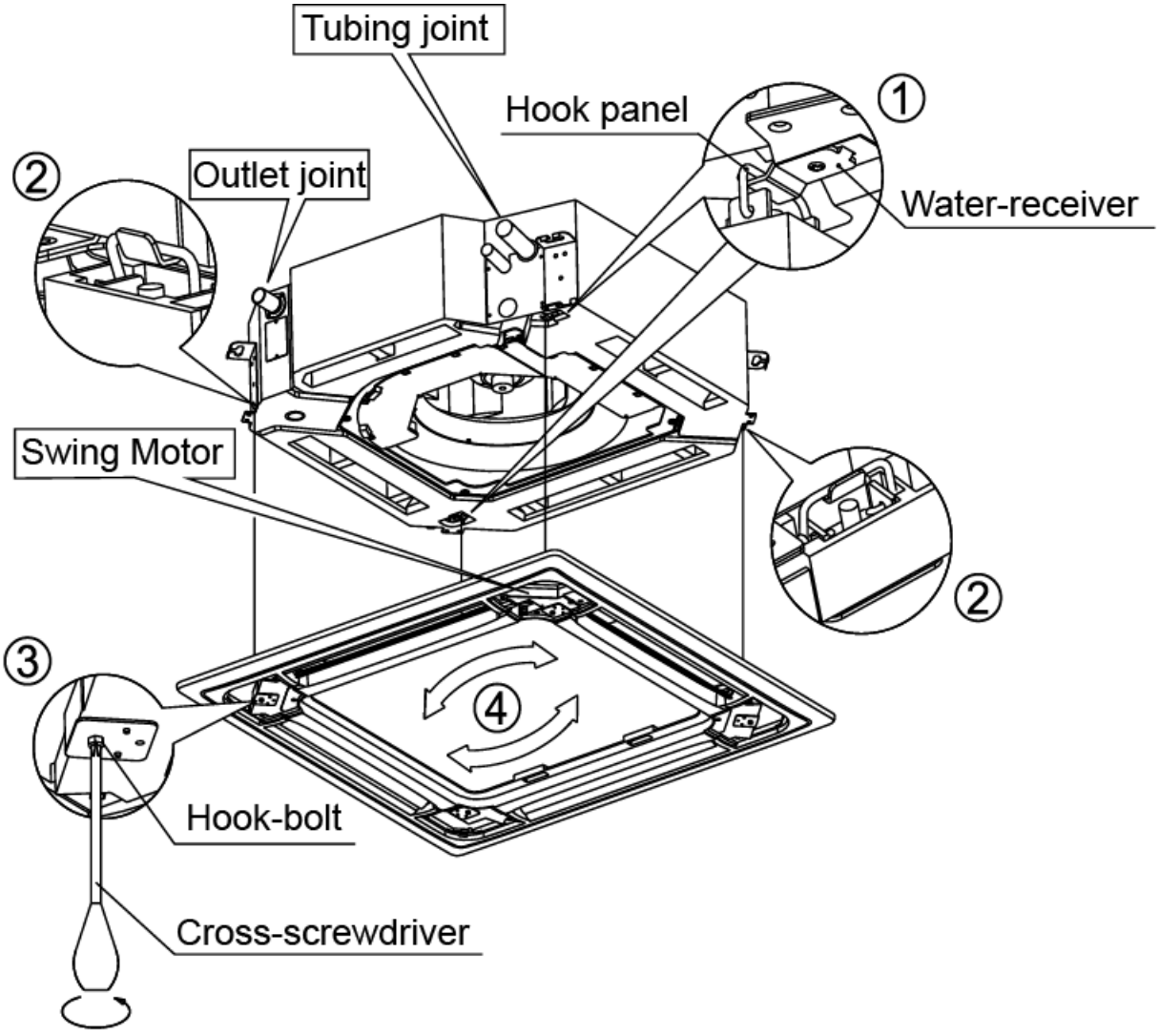




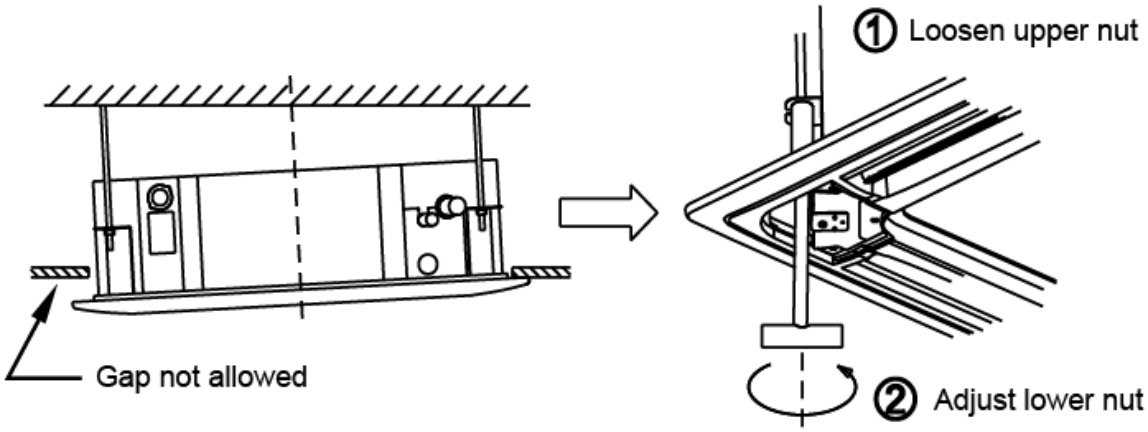
Remove the 4 corner covers.

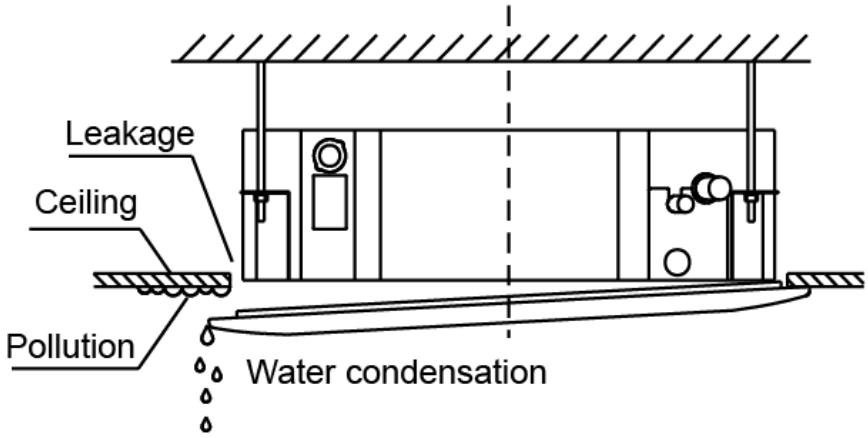


Hang the panel to the hooks on the mainbody. If the panel is with auto-lift grille, please watch the ropes lifing the grille, DO NOT make the ropes enwinded or blocked.



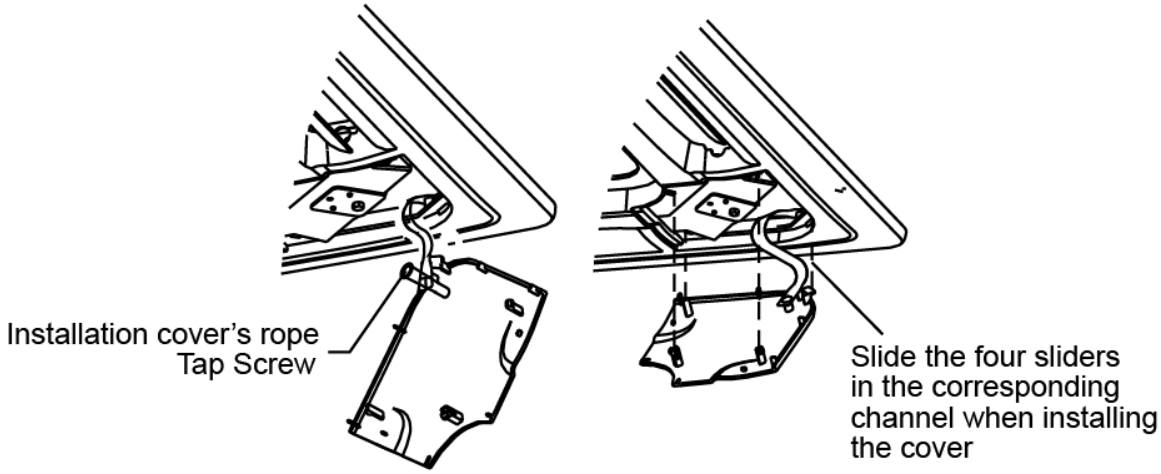
Tighten the screws under the panel hooks till the panel closely stick on the ceiling to avoid condensate water.





Hang the air-in grill to the panel, then connect the lead terminator of the swing motor and that of the control box with corresponding terminators on the body respectively.

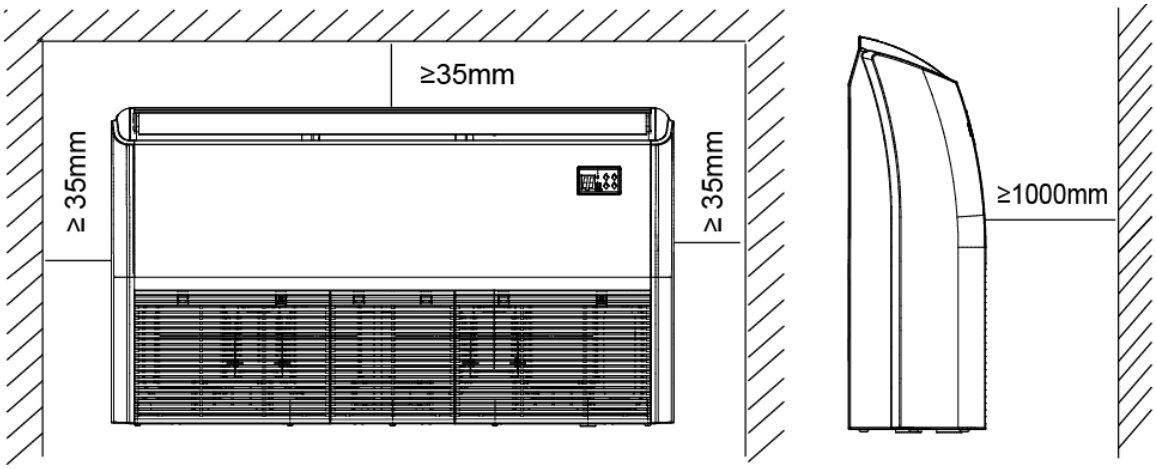
Install the 4 corner covers back.



Note: The panel shall be installed after the wiring connected.

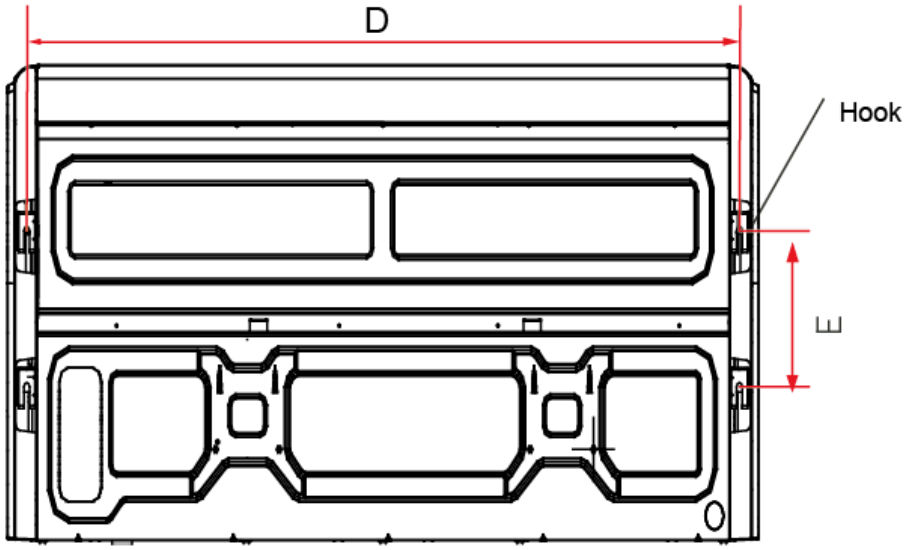
3.4 Ceiling & floor indoor unit installation

3.4.1 Service space for indoor unit



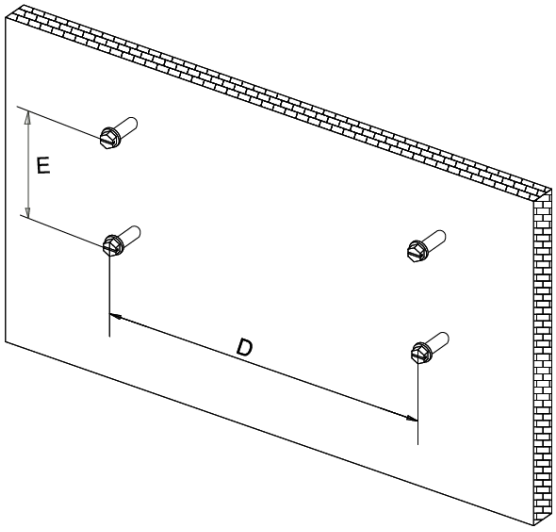
3.4.2 Bolt pitch

□ Ceiling installation



Capacity (Btu/h)	D	E
KPC-140 HN6	1200	220
KPC-176 HN6	1565	220

□ Wall-mounted installation



3.4.3 Install the pendant bolt

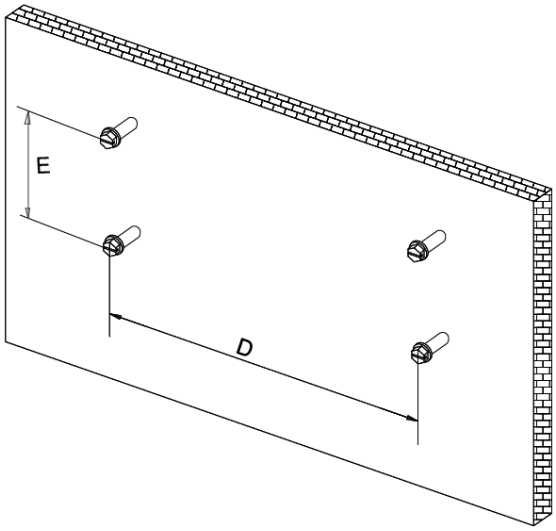
□ Ceiling installation

Select the position of installation hooks according to the hook holes positions showed in upper picture.

Drill four holes of Ø12mm, 45~50mm deep at the selected positions on the ceiling. Then embed the expansible hooks (fittings).

□ Wall-mounted installation

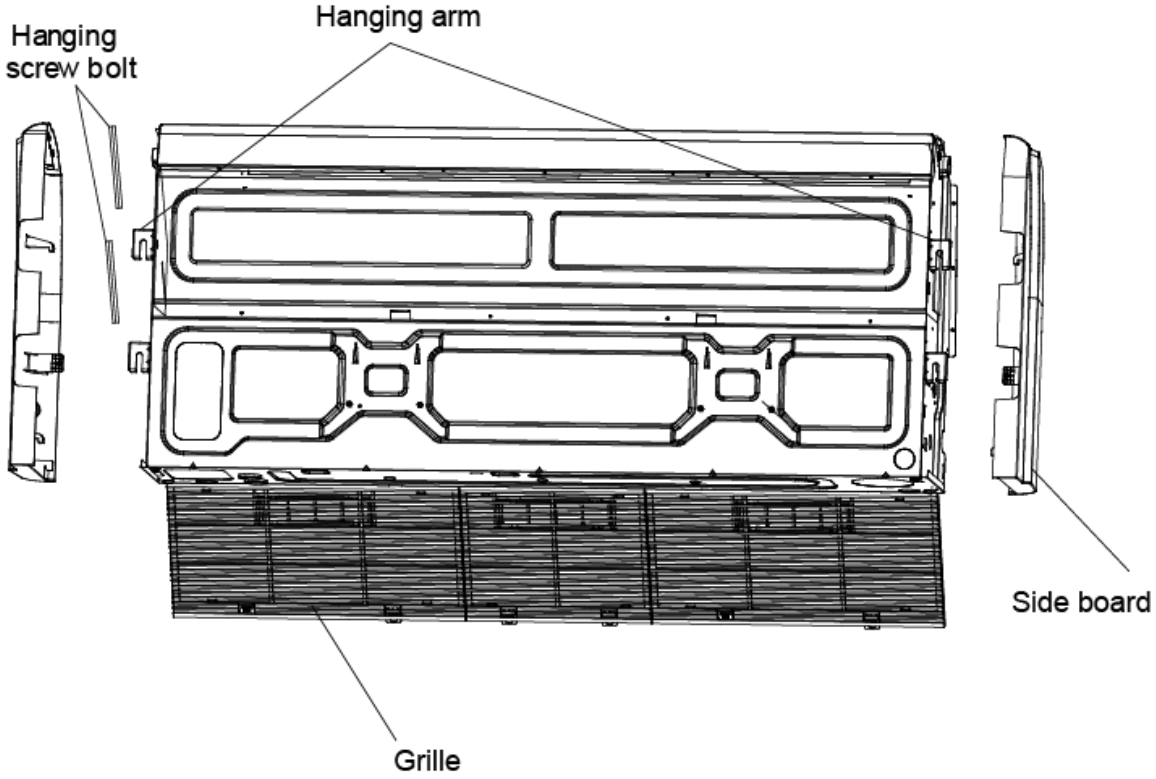
Install the tapping screws onto the wall.(Refer to picture below)



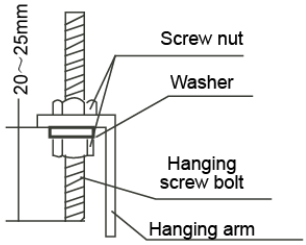
3.4.4 Install the main body

□ Ceiling installation (The only installation method for the unit with drain pump)

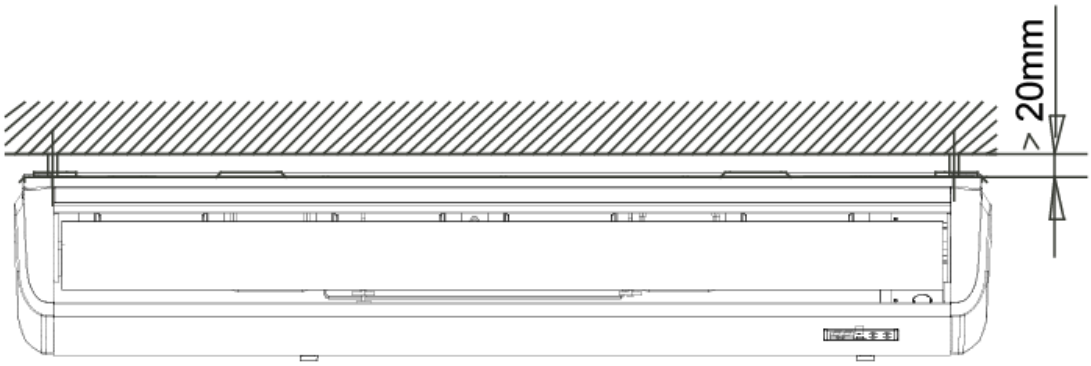
Remove the side board and the grille.

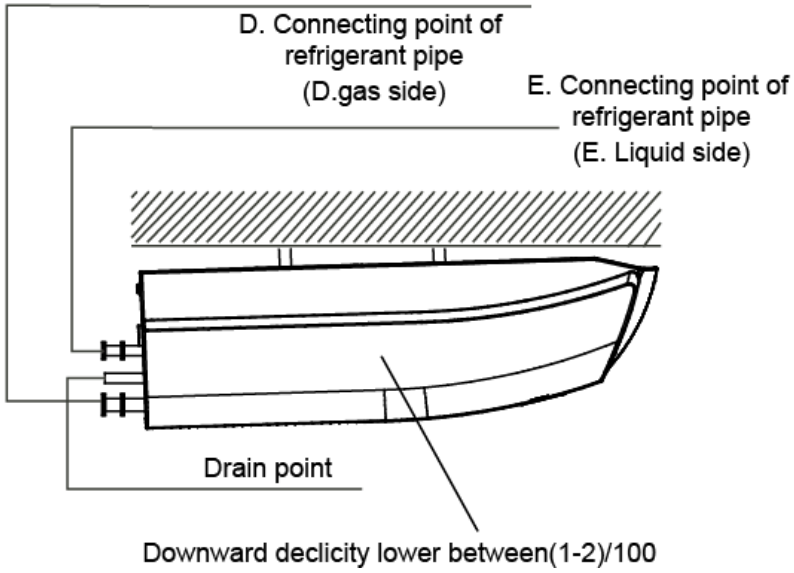


Locate the hanging arm on the hanging screw bolt. Prepare the mounting bolts on the unit.



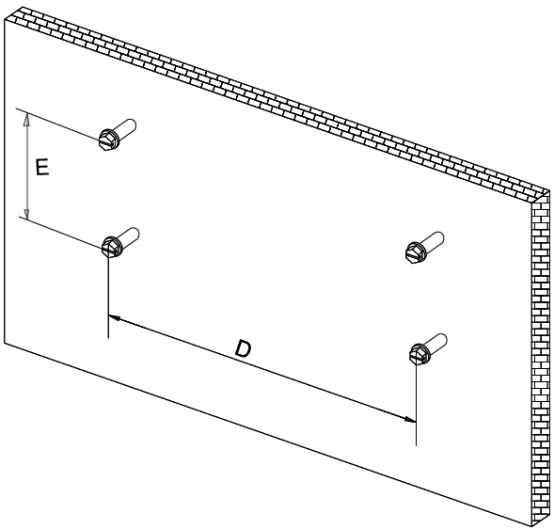
Put the side panels and grilles back.

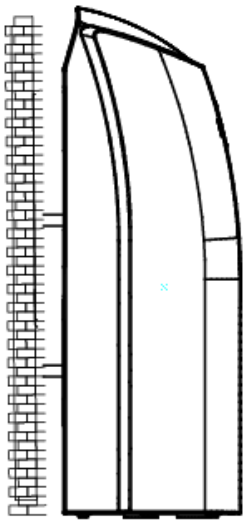



D. Connecting point of refrigerant pipe (D.gas side)
E. Connecting point of refrigerant pipe (E. Liquid side)
Drain point
Downward declicity lower between(1-2)/100

 Wall-mounted installation

Hang the indoor unit by insert the tapping screws into the hanging arms on the main unit. (The bottom of body can touch with floor or suspended, but the body must install vertically.)





4. Outdoor unit installation (Side Discharge Unit)

4.1 Service space for outdoor unit

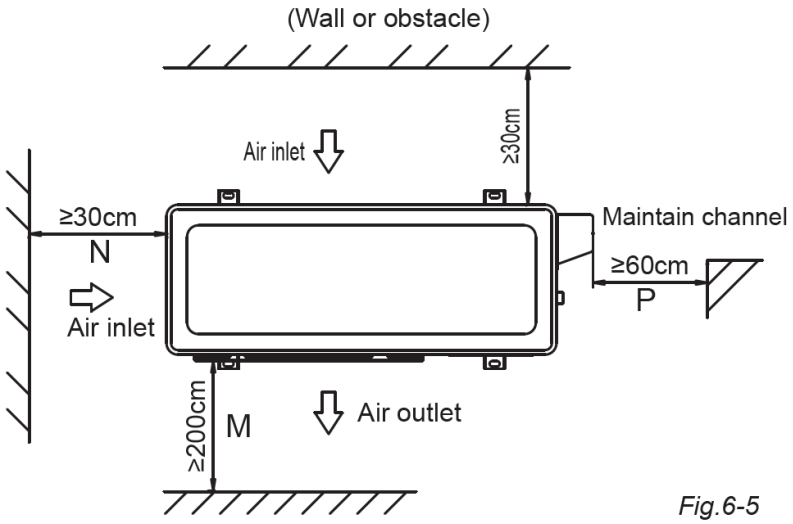
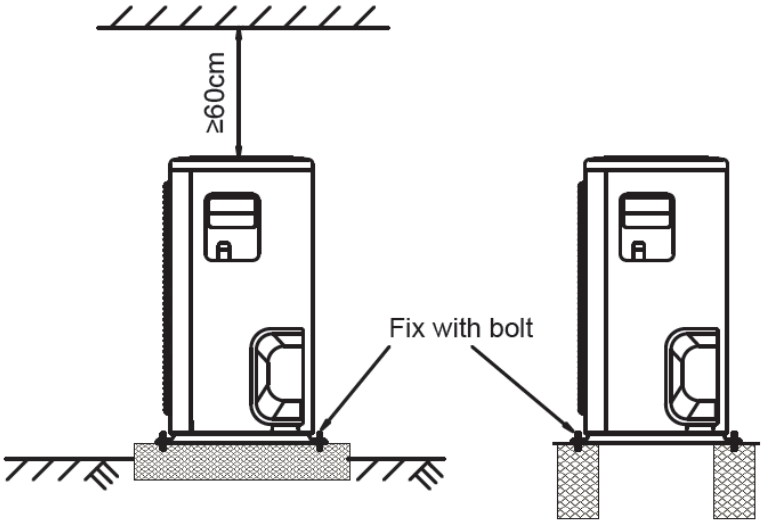
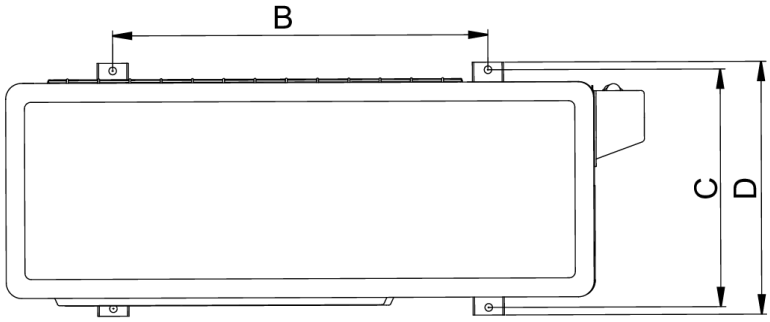


Fig.6-5



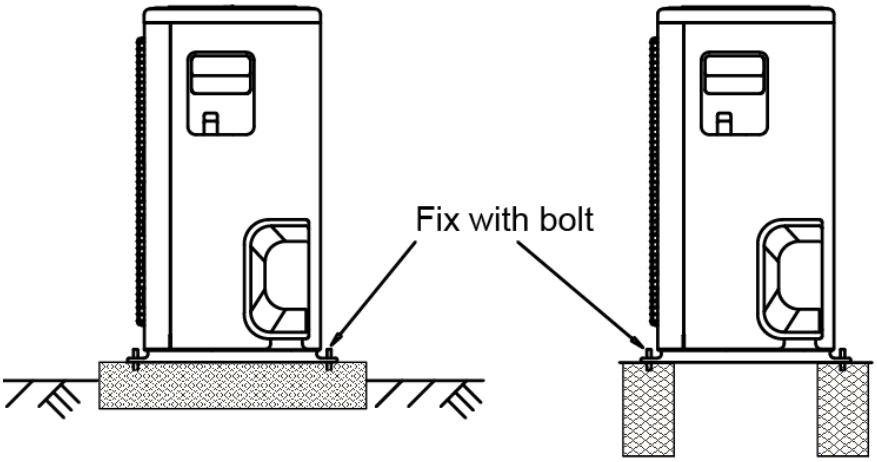
4.2 Bolt pitch



Model	B	C	D
KUE-140 HTN6	633.5	404	448
KUE-176 HTN6	633.5	404	448

4.3 Install the Unit

Since the gravity center of the unit is not at its physical center, so please be careful when lifting it with a sling.
Never hold the inlet of the outdoor unit to prevent it from deforming.
Do not touch the fan with hands or other objects.
Do not lean it more than 45, and do not lay it sidelong.
Make concrete foundation according to the specifications of the outdoor units.
Fasten the feet of this unit with bolts firmly to prevent it from collapsing in case of earthquake or strong wind.



5. Refrigerant pipe installation

5.1 Maximum pipe length and height drop

Considering the allowable pipe length and height drop to decide the installation position. Make sure the distance and height drop between indoor and outdoor unit not exceeded the date in the following table.

Model	Max. Length	Max. Elevation
45,000Btu/h~60,000Btu/h	50m	25m

5.2 The procedure of connecting pipes

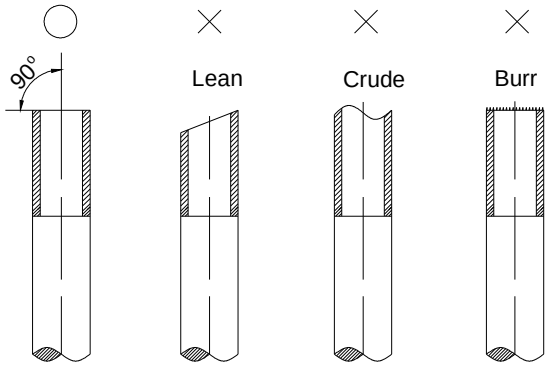
5.2.1 Choose the pipe size according to the specification table.

5.2.2 Confirm the cross way of the pipes.

5.2.3 Measure the necessary pipe length.

5.2.4 Cut the selected pipe with pipe cutter

- Make the section flat and smooth.

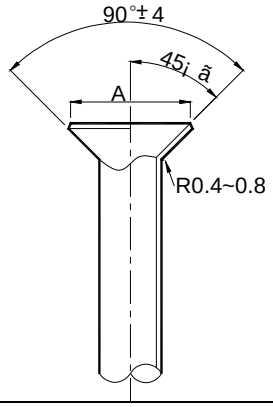


5.2.5 Insulate the copper pipe

- Before test operation, the joint parts should not be heat insulated.

5.2.6 Flare the pipe

- Insert a flare nut into the pipe before flaring the pipe
- According to the following table to flare the pipe

Pipe diameter	Flare dimension A (mm)		Flare shape
	Min	Max	
1/4" (6.35)	8.3	8.7	
3/8" (9.52)	12.0	12.4	
1/2" (12.7)	15.4	15.8	
5/8" (15.9)	18.6	19.1	
3/4" (19)	22.9	23.3	

- After flared the pipe, the opening part must be seal by end cover or adhesive tape to avoid duct or exogenous impurity come into the pipe.

5.2.7 Drill holes if the pipes need to pass the wall.

5.2.8 According to the field condition to bend the pipes so that it can pass the wall smoothly.

5.2.9 Bind and wrap the wire together with the insulated pipe if necessary.

5.2.10 Set the wall conduit

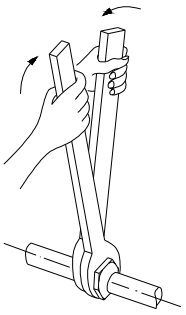
5.2.11 Set the supporter for the pipe.

5.2.12 Locate the pipe and fix it by supporter

- For horizontal refrigerant pipe, the distance between supporters should not be exceed 1m.
- For vertical refrigerant pipe, the distance between supporters should not be exceed 1.5m.

5.2.13 Connect the pipe to indoor unit and outdoor unit by using two spanners.

- Be sure to use two spanners and proper torque to fasten the nut, too large torque will damage the bell mouthing, and too small torque may cause leakage. Refer the following table for different pipe connection.

Pipe Diameter	Torque		Sketch map
	(kgf.cm)	(N.cm)	
1/4" (6.35)	144~176	1420~1720	
3/8" (9.52)	333~407	3270~3990	
1/2" (12.7)	504~616	4950~6030	
5/8" (15.9)	630~770	6180~7540	
3/4" (19)	990~1210	9270~11860	

6. Drainage pipe installation

Install the drainage pipe as shown below and take measures against condensation. Improperly installation could lead to leakage and eventually wet furniture and belongings.

6.1 Installation principle

- Ensure at least 1/100 slope of the drainage pipe
- Adopt suitable pipe diameter
- Adopt nearby condensate water discharge

6.2 Key points of drainage water pipe installation

6.2.1 Considering the pipeline route and elevation

- Before installing condensate water pipeline, determine its route and elevation to avoid intersection with

other pipelines and ensure slope is straight.

6.2.2 Drainage pipe selection

- The drainage pipe diameter shall not small than the drain hose of indoor unit
- According to the water flow rate and drainage pipe slope to choose the suitable pipe, the water flow rate is decided by the capacity of indoor unit.

Relationship between water flow rate and capacity of indoor unit

Capacity (x1000Btu)	Water flow rate (l/h)
12	2.4
18	4
24	6
30	7
36	8
42	10
48	12
60	14

According to the above table to calculate the total water flow rate for the confluence pipe selection.

For horizontal drainage pipe (The following table is for reference)

PVC pipe	Reference value of inner diameter of pipe (mm)	Allowable maximum water flow rate (l/h)		Remark
		Slope 1/50	Slope 1/100	
PVC25	20	39	27	For branch pipe
PVC32	25	70	50	
PVC40	31	125	88	Could be used for confluence pipe
PVC50	40	247	175	
PVC63	51	473	334	

Attention: Adopt PVC40 or bigger pipe to be the main pipe.

For Vertical drainage pipe (The following table is for reference)

PVC pipe	Reference value of inner diameter of pipe (mm)	Allowable maximum water flow rate (l/h)	Remark
PVC25	20	220	For branch pipe
PVC32	25	410	
PVC40	31	730	Could be used for confluence pipe
PVC50	40	1440	
PVC63	51	2760	
PVC75	67	5710	
PVC90	77	8280	

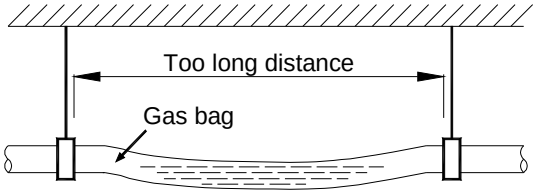
Attention: Adopt PVC40 or bigger pipe to be the main pipe.

6.2.3 Individual design of drainage pipe system

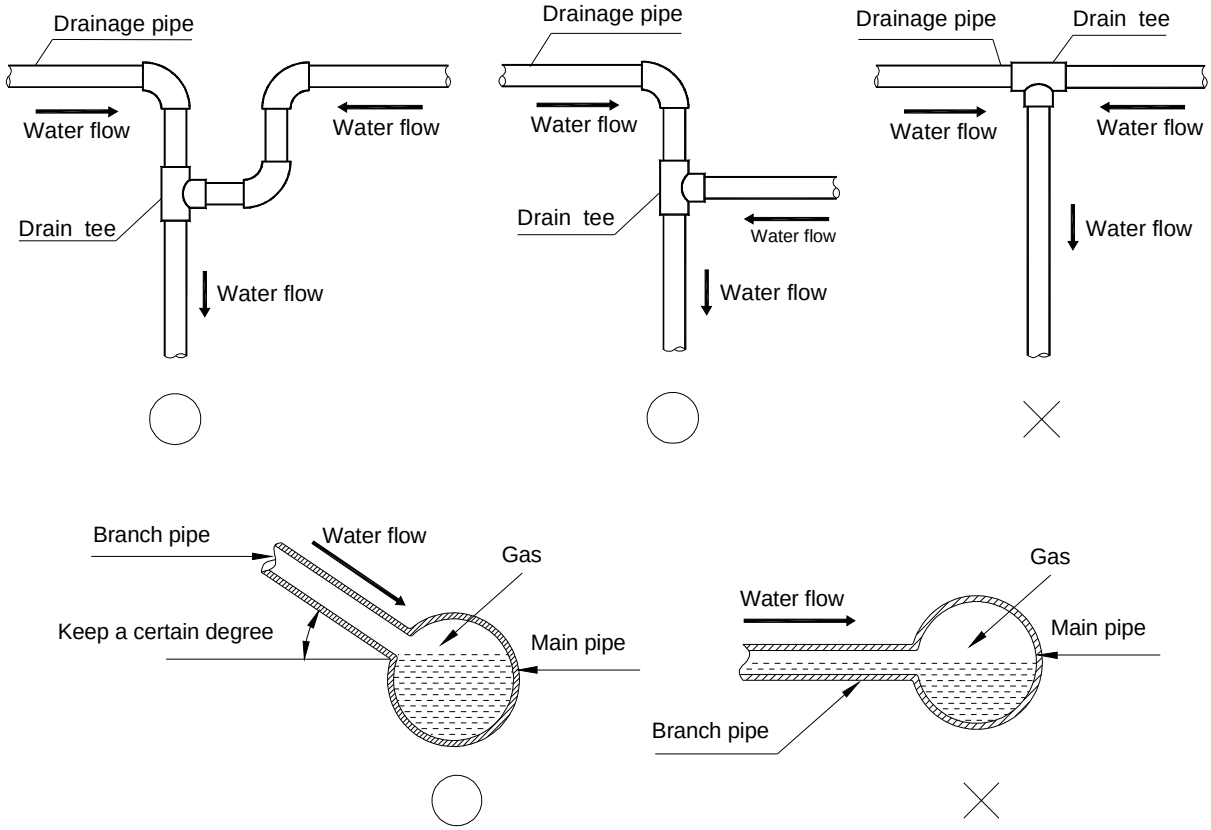
- The drainage pipe of air conditioner shall be installed separately with other sewage pipe, rainwater pipe and drainage pipe in building.
- The drainage pipe of the indoor unit with water pump should be apart from the one without water pump.

6.2.4 Supporter gap of drainage pipe

- In general, the supporter gap of the drainage pipe horizontal pipe and vertical pipe is respectively 1m~1.5m and 1.5m~2.0m.
- Each vertical pipe shall be equipped with not less than two hangers.
- Overlarge hanger gap for horizontal pipe shall create bending, thus leading to air block.



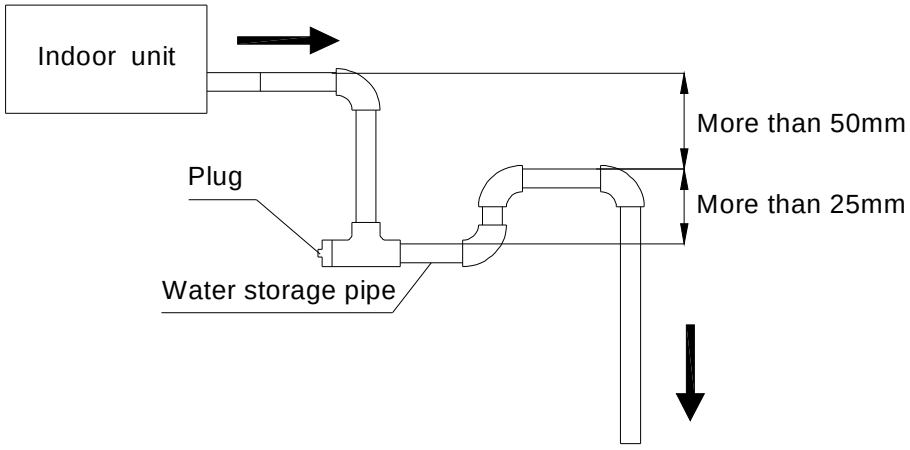
6.2.5 The horizontal pipe layout should avoid converse flow or bad flow



- The correct installation will not cause converse water flow and the slope of the branch pipes can be adjusted freely
- The false installation will cause converse water flow and the slope of the branch pipe can not be adjusted.

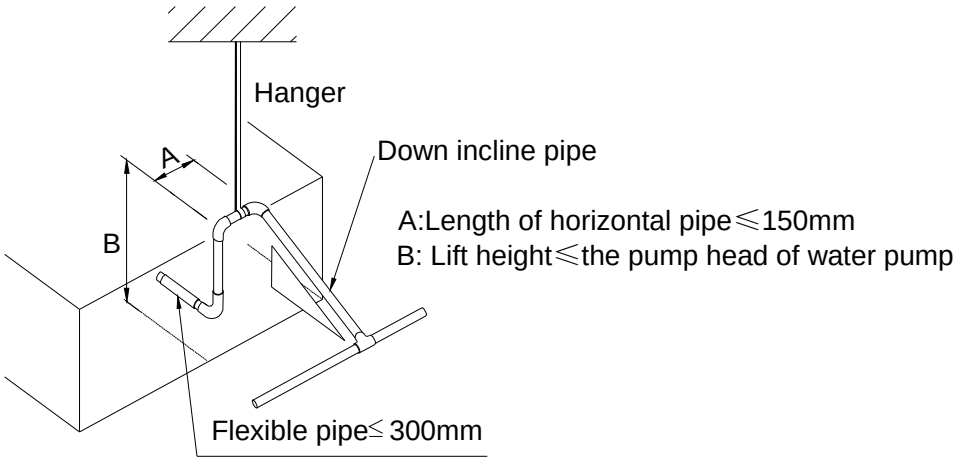
6.2.6 Water storage pipe setting

- If the indoor unit has high extra static pressure and without water pump to elevate the condensate water, such as high extra static pressure duct unit , the water storage pipe should be set to avoid converse flow or blow water phenomena.



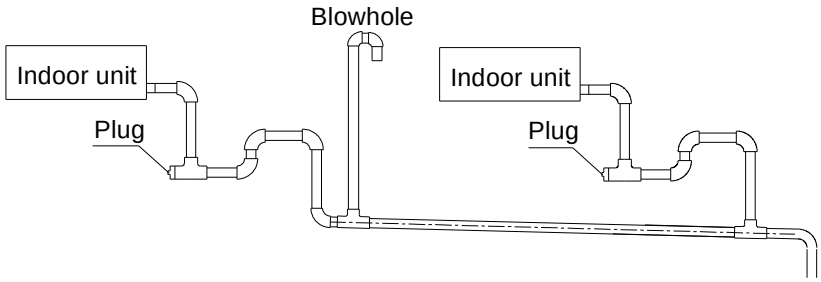
6.2.7 Lifting pipe setting of indoor unit with water pump

- The length of lifting pipe should not exceed the pump head of indoor unit water pump.
  Pump head of big four way cassette: 750mm
  Pump head of compact four way cassette: 500mm
- The drainage pipe should be set down inclined after the lifting pipe immediately to avoid wrong operation of water level switch.
- Refer the following picture for installation reference.



6.2.8 Blowhole setting

- For the concentrated drainage pipe system, there should design a blowhole at the highest point of main pipe to ensure the condensate water discharge smoothly.
- The air outlet shall face down to prevent dirt entering pipe.
- Each indoor unit of the system should be installed it.
- The installation should be considering the convenience for future cleaning.



6.2.9 The end of drainage pipe shall not contact with ground directly.

6.3 Drainage test

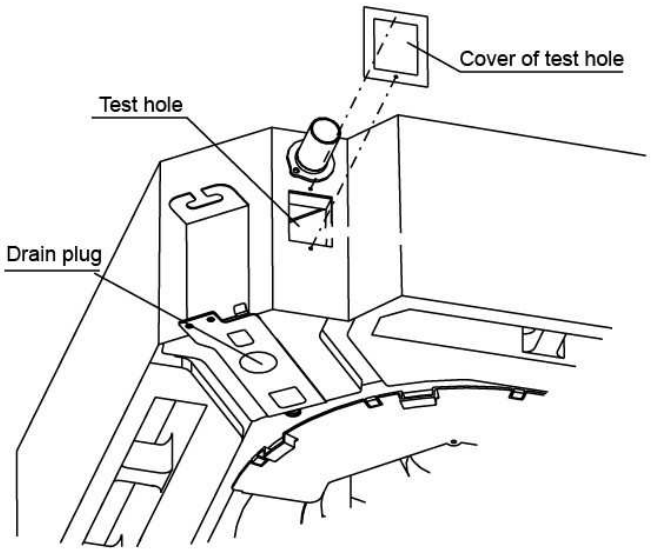
6.3.1 Water leakage test

After finishing the construction of drainage pipe system, fill the pipe with water and keep it for 24 hours to check whether there is leakage at joint section.

6.3.2 Water discharge test

1. Natural drainage mode(the indoor unit with outdoor drainage pump)
   Infuse above 600ml water through water test hole slowly into the water collector, observe whether the water can discharge through the transparent hard pipe at drainage outlet.
2. Pump drainage mode

2.1 Disconnect the plug of water level switch, remove the cover of water test hole and slowly infuse about 2000ml water through the water test hole, be sure that the water will not touch the motor of drainage pump.



2.2 Power on and let the air conditioner operate for cooling. Check operation status of drainage pump, and then connect the plug of water level switch, check the operation sound of water pump and observe whether the water can discharge through the transparent hard pipe at drainage outlet. (In light of the length of drainage pipe, water shall be discharged about 1 minute delayed)

2.3 Stop the operation of air conditioner, power off the power supply and put the cover of water test hole back to the original place.

a. After stopped the air conditioner 3 minutes, check whether there is anything abnormal. If drainage pipes have not been distributed properly, over back-flow water shall cause the flashing of alarm indicator at remote-controlled receiving board and even water shall run over the water collector.

b. Continuously infusing water until water level alarmed, check whether the drainage pump could discharge water at once. If water level does not decline under warning water level 3 minutes later, it shall cause shutdown of unit. When this situation happens, the normal startup only can be recovered by turning down power supply and eliminating accumulated water.

Note: Drain plug at the main water-containing plate is used for eliminating accumulated water in water-containing plate when maintaining air conditioner fault. During normal operation, the plug shall be filled in to prevent leakage.

6.4 Insulation work of drainage pipe

Refer the introduction to the insulation engineering parts.

7. Vacuum Drying and Leakage Checking

7.1 Purpose of vacuum drying

- Eliminating moisture in system to prevent the phenomena of ice-blockage and copper oxidation. Ice-blockage shall cause abnormal operation of system, while copper oxide shall damage compressor.
- Eliminating the non-condensable gas (air) in system to prevent the components oxidizing, pressure fluctuation and bad heat exchange during the operation of system.

7.2 Selection of vacuum pump

- The ultimate vacuum degree of vacuum pump shall be -756mmHg or above.
- Precision of vacuum pump shall reach 0.02mmHg or above.

7.3 Operation procedure for vacuum drying

Due to different construction environment, two kinds of vacuum drying ways could be chosen, namely ordinary vacuum drying and special vacuum drying.

7.3.1 Ordinary vacuum drying

1. When conduct first vacuum drying, connect pressure gauge to the infusing mouth of gas pipe and liquid pipe, and keep vacuum pump running for 1hour (vacuum degree of vacuum pump shall be reached -755mmHg).
2 If the vacuum degree of vacuum pump could not reach -755mmHg after 1 hour of drying, it indicates that there is moisture or leakage in pipeline system and need to go on with drying for half an hour.
3 If the vacuum degree of vacuum pump still could not reach -755mmHg after 1.5 hours of drying, check whether there is leakage source.
4 Leakage test: After the vacuum degree reaches -755mmHg, stop vacuum drying and keep the pressure for 1 hour. If the indicator of vacuum gauge does not go up, it is qualified. If going up, it indicates that there is moisture or leak source.

7.3.2 Special vacuum drying

The special vacuum drying method shall be adopted when:
1. Finding moisture during flushing refrigerant pipe.
2. Conducting construction on rainy day, because rain water might penetrated into pipeline.
3. Construction period is long, and rain water might penetrated into pipeline.
3. Rain water might penetrate into pipeline during construction.

Procedures of special vacuum drying are as follows:
1. Vacuum drying for 1 hour.
2. Vacuum damage, filling nitrogen to reach 0.5Kgf/cm2 .
   Because nitrogen is dry gas, vacuum damage could achieve the effect of vacuum drying, but this method could not achieve drying thoroughly when there is too much moisture. Therefore, special attention shall be drawn to prevent the entering of water and the formation of condensate water.
3. Vacuum drying again for half an hour.
   If the pressure reached -755mmHg, start to pressure leakage test. If it cannot reached the value, repeat vacuum damage and vacuum drying again for 1 hour.
4 Leakage test: After the vacuum degree reaches -755mmHg, stop vacuum drying and keep the pressure for 1 hour. If the indicator of vacuum gauge does not go up, it is qualified. If going up, it indicates that there is moisture or leak source.

8. Additional refrigerant charge

- After the vacuum drying process is carried out, the additional refrigerant charge process need to be performed.
- The outdoor unit is factory charged with refrigerant. The additional refrigerant charge volume is decided by the diameter and length of the liquid pipe between indoor and outdoor unit. Refer the following formula to calculate the charge volume.

Diameter of liquid pipe (mm)	Φ6.35	Φ9.52	Φ12.7
Formula	V=11g/m×(L-5)	V=30g/m×(L-5)	V=60g/m×(L-5)

V: Additional refrigerant charge volume (g).
L : The length of the liquid pipe (m).

Note:
- Refrigerant may only be charged after performed the vacuum drying process.
- Always use gloves and glasses to protect your hands and eyes during the charge work.
- Use electronic scale or fluid infusion apparatus to weight refrigerant to be recharged. Be sure to avoid extra refrigerant charged, it may cause liquid hammer of the compressor or protections.
- Use supplementing flexible pipe to connect refrigerant cylinder, pressure gauge and outdoor unit. And The refrigerant should be charged in liquid state. Before recharging, The air in the flexible pipe and manifold gauge should be exhausted.
- After finished refrigerant recharge process, check whether there is refrigerant leakage at the connection joint part.(Using gas leakage detector or soap water to detect).

9. Engineering of insulation

9.1 Insulation of refrigerant pipe

9.1.1 Operational procedure of refrigerant pipe insulation

Cut the suitable pipe → insulation (except joint section) → flare the pipe → piping layout and connection→ vacuum drying → insulate the joint parts

9.1.2 Purpose of refrigerant pipe insulation

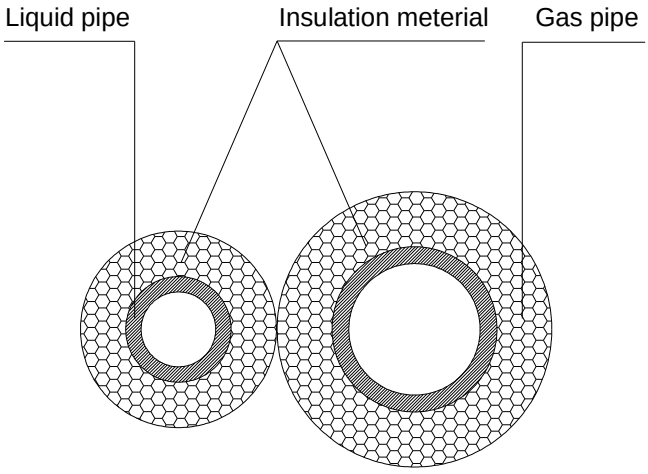
- During operation, temperature of gas pipe and liquid pipe shall be over-heating or over-cooling extremely. Therefore, it is necessary to carry out insulation; otherwise it shall debase the performance of unit and burn compressor.
- Gas pipe temperature is very low during cooling. If insulation is not enough, it shall form dew and cause leakage.
- Temperature of gas pipe is very high (generally 50-100) during heating. Insulation work must be carried out to prevent hurt by carelessness touching.

9.1.3 Insulation material selection for refrigerant pipe

- The burning performance should over 120
- According to the local law to choose insulation materials
- The thickness of insulation layer shall be above 10mm.If in hot or wet environment place, the layer of insulation should be thicker accordingly.

9.1.4 Installation highlights of insulation construction

- Gas pipe and liquid pipe shall be insulated separately, if the gas pipe and liquid pipe were insulated together; it will decrease the performance of air conditioner.



- The insulation material at the joint pipe shall be 5~10cm longer than the gap of the insulation material.
- The insulation material at the joint pipe shall be inserted into the gap of the insulation material.
- The insulation material at the joint pipe shall be banded to the gap pipe and liquid pipe tightly.
- The linking part should be use glue to paste together
- Be sure not bind the insulation material over-tight, it may extrude out the air in the material to cause bad insulation and cause easy aging of the material.

9.2 Insulation of drainage pipe

9.2.1 Operational procedure of refrigerant pipe insulation

Select the suitable pipe → insulation (except joint section) → piping layout and connection→ drainage test→ insulate the joint parts

9.2.2 Purpose of drainage pipe insulation

The temperature of condensate drainage water is very low. If insulation is not enough, it shall form dew and cause leakage to damage the house decoration.

9.2.3 Insulation material selection for drainage pipe

- The insulation material should be flame retardant material, the flame retardancy of the material should be selected according to the local law.
- Thickness of insulation layer is usually above 10mm.
- Use specific glue to paste the seam of insulation material, and then bind with adhesive tape. The width of tape shall not be less than 5cm. Make sure it is firm and avoid dew.

9.2.4 Installation and highlights of insulation construction

- The single pipe should be insulated before connecting to another pipe, the joint part should be insulated after the drainage test.
- There should be no insulation gap between the insulation material.

10. Engineering of electrical wiring

10.1 Highlights of electrical wiring installation

- All field wiring construction should be finished by qualified electrician.
- Air conditioning equipment should be grounded according to the local electrical regulations.
- Current leakage protection switch should be installed.
- Do not connect the power wire to the terminal of signal wire.
- When power wire is parallel with signal wire, put wires to their own wire tube and remain at least 300mm gap.
- According to table in indoor part named “the specification of the power” to choose the wiring, make sure the selected wiring not small than the date showing in the table.
- Select different colors for different wire according to relevant regulations.
- Do not use metal wire tube at the place with acid or alkali corrosion, adopt plastic wire tube to replace it.
- There must be not wire connect joint in the wire tube If joint is a must, set a connection box at the place.
- The wiring with different voltage should not be in one wire tube.
- Ensure that the color of the wires of outdoor and the terminal No. are same as those of indoor unit respectively.

11. Test operation

11.1 The test operation must be carried out after the entire installation has been completed.

11.2 Please confirm the following points before the test operation.

- The indoor unit and outdoor unit are installed properly.
- Tubing and wiring are correctly completed.
- The refrigerant pipe system is leakage-checked.
- The drainage is unimpeded.
- The ground wiring is connected correctly.
- The length of the tubing and the added stow capacity of the refrigerant have been recorded.
- The power voltage fits the rated voltage of the air conditioner.
- There is no obstacle at the outlet and inlet of the outdoor and indoor units.
- The gas-side and liquid-side stop values are both opened.
- The air conditioner is pre-heated by turning on the power.

11.3 Test operation

Set the air conditioner under the mode of "COOLING" by remote controller, and check the following points.

Indoor unit

- Whether the switch on the remote controller works well.
- Whether the buttons on the remote controller works well.
- Whether the air flow louver moves normally.
- Whether the room temperature is adjusted well.
- Whether the indicator lights normally.
- Whether the temporary buttons works well.
- Whether the drainage is normal.
- Whether there is vibration or abnormal noise during operation.

Outdoor unit

- Whether there is vibration or abnormal noise during operation.
- Whether the generated wind, noise, or condensed of by the air conditioner have influenced your neighborhood.
- Whether any of the refrigerant is leaked.

Part 5
Electrical Control System

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3. Controller.....97

1. Electrical Control Function

1.1 Definition

T1: Indoor room temperature

T2: Coil temperature of evaporator

T3: Coil temperature of condenser

T4: Outdoor ambient temperature

T5: Compressor discharge temperature

1.2 Main Protection

1.2.1 Time delay at restart for compressor.

1.2.2 Sensor protection at open circuit and breaking disconnection.

1.2.3 Phase check function

If the phase sequence is detected wrong or lack of 1 or 2 phase, the unit won't start and there is error code displayed on outdoor PCB.

1.2.4 Over-current protection

When compressor is running, if the current is over twice of the rated for 3 seconds, the compressor will stop and an error code will be displayed on the outdoor PCB. If the current becomes normal, the indoor sends signal to the outdoor, the outdoor will display normally.

1.2.5 Fan Speed is out of control

When Indoor fan speed keeps too low (less than 300RPM) for 50s, the unit will stop and the LED will display the failure.

1.3 Operation Modes and Functions

1.3.1 Fan mode

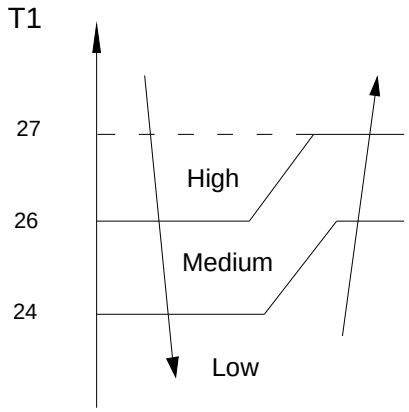
(1) Outdoor fan and compressor stop.

(2) Temperature setting function is disabled, and no setting temperature is displayed.

(3) Indoor fan can be set to high/(med)/low/auto.

(4) The louver operates same as in cooling mode.

(5) Auto fan:

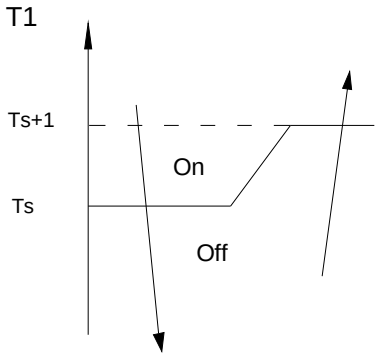


1.3.2 Cooling Mode

1.3.2.1 Compressor running rules

Once the compressor starts up, it will follow the below rules:

When indoor room temp.T1 is lower than Ts, the compressor and outdoor fan will shut off. When T1 is higher than Ts+1, the compressor and outdoor fan will start up.

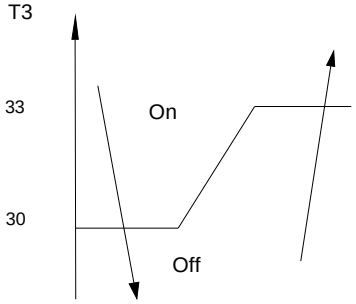


1.3.2.2 Outdoor fan running rules

For double-fan outdoor units:

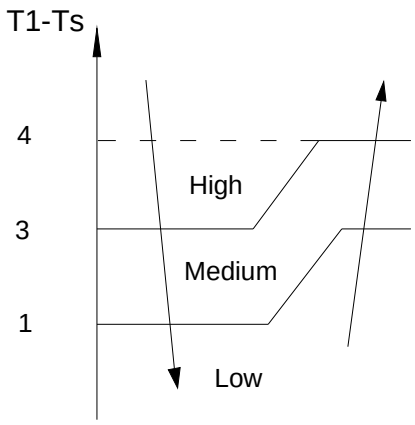
Fan(above): The outdoor fan runs all the time.

Fan(below):



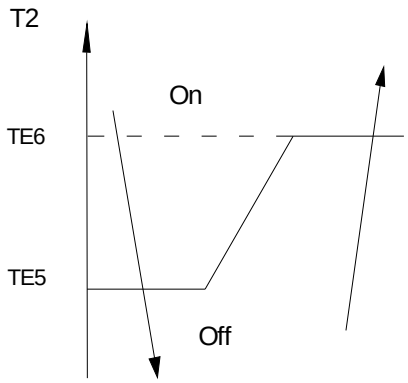
1.3.2.3 Indoor fan running rules

In cooling mode, indoor fan runs all the time and the speed can be selected as high, medium, low and auto. The auto fan:



1.3.2.4 Low evaporator coil temperature T2 protection

For Duct:

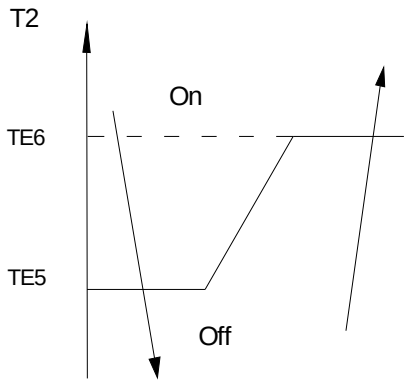


When the evaporator coil temp.T2 keeps lower than TE5 for Time0, the compressor and outdoor fan will shut off. When T2 is higher than TE6, the compressor and outdoor fan will restart up.

For Ceiling & Floor, super-slim cassette type:

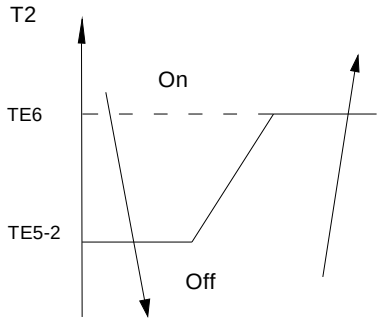
AC will enter T2 protection if any of the following conditions is satisfied.

Condition 1:



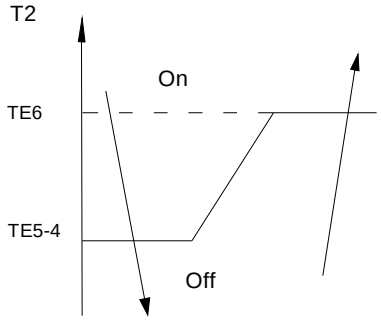
When the evaporator coil temp.T2 keeps lower than TE5 for 30 minutes, the compressor and outdoor fan will shut off. When T2 is higher than TE6, the compressor and outdoor fan will restart up.

Condition 2:



When the evaporator coil temp.T2 keeps lower than TE5-2 for 20 minutes, the compressor and outdoor fan will shut off. When T2 is higher than TE6, the compressor and outdoor fan will restart up.

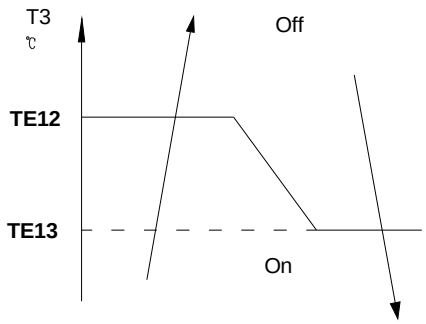
Condition 3:



When the evaporator coil temp.T2 keeps lower than TE5-4 for 8 minutes, the compressor and outdoor fan will shut off. When T2 is higher than TE6, the compressor and outdoor fan will restart up.

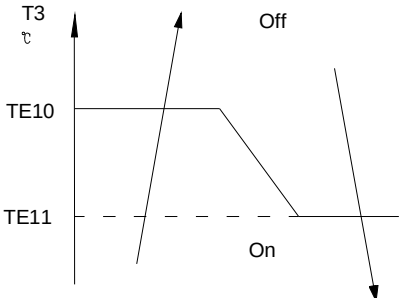
1.3.2.5 Condenser high temperature T3 protection

For Duct & super-slim cassette type:



When T3≥TE12 for Time1, the compressor will shut off. When T3＜TE13,the compressor will restart.

For Ceiling & Floor:



When T3≥TE10, the compressor will shut off. When T3＜TE11,the compressor will restart.

1.3.3 Heating Mode

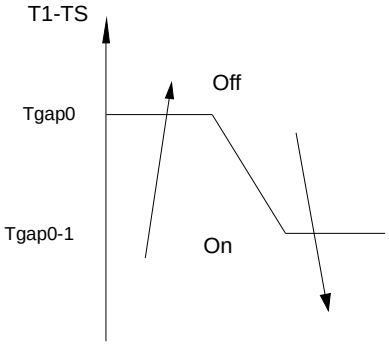
1.3.3.1 Compressor running rules:

For Duct & super-slim cassette type: Once the compressor starts up, it keeps running 7 minutes,

For Ceiling & Floor**:** Once the compressor starts up, it keeps running HEATFTIM minutes,

then it will follow the below rules:

When indoor room temp.T1 is higher than Tgap0, the compressor and outdoor fan will shut off. When T1 is lower than Tgap0-1, the compressor and outdoor fan will start up.

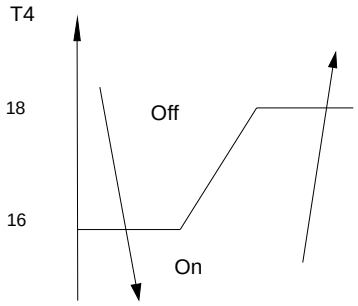


For Ceiling & Floor:Tgap0 = setting temperature-compensation.

1.3.3.2 Outdoor fan running rules:

Fan(below): The outdoor fan runs all the time.

Fan(above):



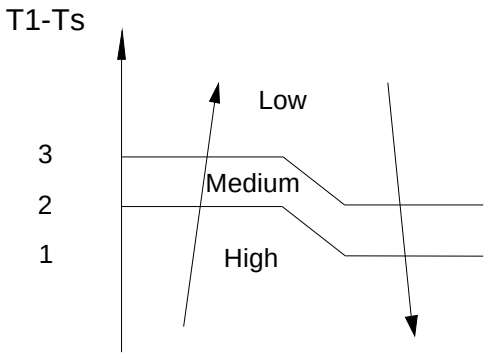
1.3.3.3 Indoor fan running rules:

When the compressor is on, the indoor fan can be set to high/med/low/auto. And the anti-cold wind function has the priority.

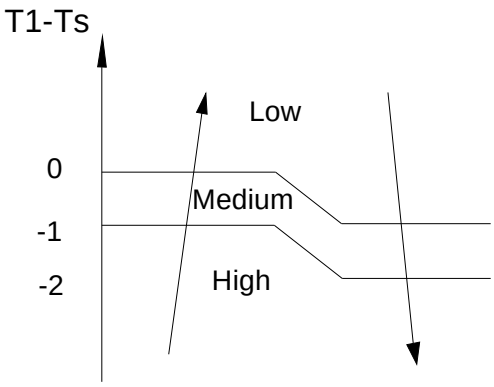
Auto fan action:

For Duct & super-slim cassette type:

For Ceiling & Floor: setting temperature-compensation.=4°C



For Ceiling & Floor: setting temperature-compensation.=1°C



1.3.3.4 Defrosting mode：

- **Condition of defrosting:**

AC will enter defrosting mode if any of the following items is satisfied.

A: T3< TE19 and the compressor keeps running over 45 minutes. Meanwhile T3＜TE17 for 3minutes.

B: After the last defrosting, the time that the outdoor fan is off but the compressor is on in high T2 protection cumulates up to 90 minutes.

- **Condition of ending defrosting:**

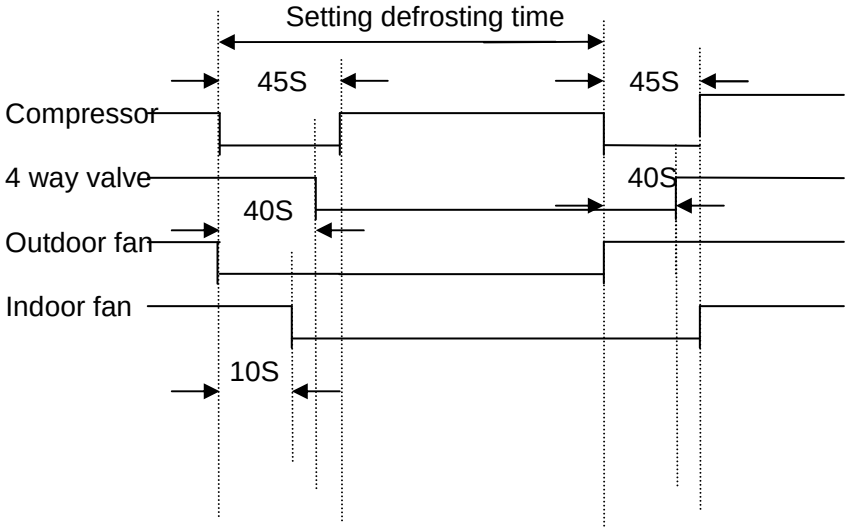
If any one of the following items is satisfied, the defrosting will terminate and the machine will turn to normal heating mode.

A: T3 rises to be higher than TE18.

B: The machine has run for 10 minutes in defrosting.

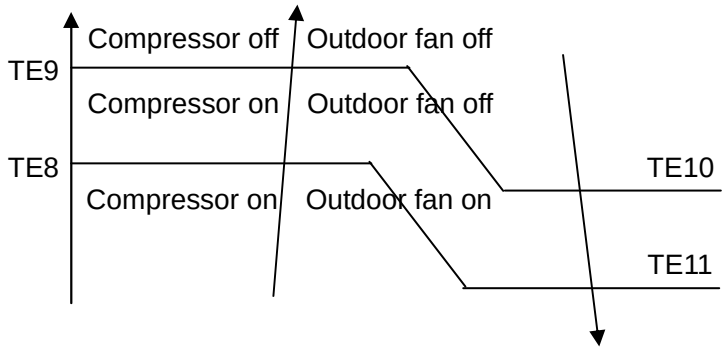
C: Turn to other modes or off.

- **Defrosting action：**

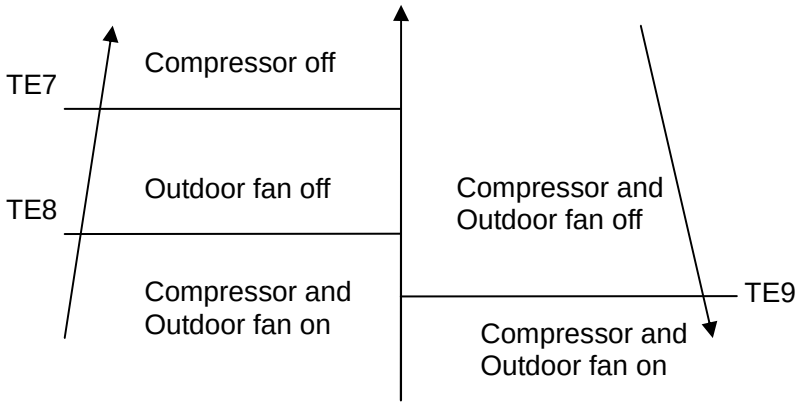


1.3.3.5 High evaporator coil temp.T2 protection:

For Duct and Super-slim Cassette:



For Ceiling & Floor:



1.3.4 Auto-mode

This mode can be chosen with remote controller and the setting temperature can be changed between 17~30˚C.

In auto mode, the machine will choose cooling, heating or fan-only mode according to ΔT (ΔT =T1-Ts).

For Duct and Super-slim Cassette:

ΔT=T1-Ts	Running mode
ΔT＞2℃	Cooling
-1≤ΔT≤2℃	Fan-only
ΔT<-1℃	Heating

For Ceiling & Floor:

ΔT=T1-Ts	Running mode
ΔT＞2℃	Cooling
-1<ΔT≤2℃	Fan-only
ΔT≤-1℃	Heating

Indoor fan will run at auto fan of the relevant mode.

The louver operates same as in relevant mode.

If the machine switches mode between heating and cooling, the compressor will keep stopping for 15 minutes and then choose mode according to T1-Ts.

If the setting temperature is modified, the machine will choose running function again.

1.3.5 Drying mode

1.3.5.1 The indoor fan will keep running at low speed.

1.3.5.2 All protections are active and the same as that in cooling mode.

1.3.5.3 The louver operates the same as in cooling mode.

1.3.6 Timer function

1.3.6.1 Timing range is 24 hours.

1.3.6.2 Timer on. The machine will turn on automatically when reaching the setting time.

1.3.6.3 Timer off. The machine will turn off automatically when reaching the setting time.

1.3.6.4 Timer on/off. The machine will turn on automatically when reaching the setting “on” time, and then turn off automatically when reaching the setting “off” time.

1.3.6.5 Timer off/on. The machine will turn off automatically when reaching the setting “off” time, and then turn on automatically when reaching the setting “on” time.

1.3.6.6 The timer function will not change the AC current operation mode. Suppose AC is off now, it will not start up firstly after setting the “timer off” function. And when reaching the setting time, the timer LED will be off and the AC running mode has not been changed.

1.3.6.7 The setting time is relative time.

1.3.7 Economy function

1.3.7.1 It is valid in cooling, heating and auto mode.

1.3.7.2. Turning off, changing mode or setting fan speed will cancel economy function.

1.3.7.3 Operation process in sleep mode is as follow:

After pressing ECONOMIC or SLEEP button on the controller, the machine will go into economy mode.

When cooling, the setting temperature rises 1℃(be lower than 30℃) every hour, 2 hours later the setting temperature stops rising.

For heat pump models, when they are in heating, the setting temperature reduces 1℃(be higher than 17℃) every hour, 2 hours later the setting temperature stops reducing.

1.3.7.4 In this mode, the fan speed is forced into AUTO mode.

1.3.8 Auto-Restart function

The indoor unit is equipped with auto-restart function, which is carried out through an auto-restart module. In case of a sudden power failure, the module memorizes the setting conditions before the power failure. The unit will resume the previous operation setting (not including Swing function) automatically after 3 minutes when power returns.

1.3.9 Drain pump control(For duct & cassete)

1.3.9.1 Water level check

The water lever will be checked every 5 seconds, if the feedback signal is abnormal, it will be considered as drain water full by the control system.

1.3.9.2 Drain pump control

If there is no water full error, the drain pump will be on when the unit is in cooling mode (including auto-cooling and forced cooling) and dry mode. It will be off when the unit is in heating mode, fan only mode or off state (if the pump is on before the unit is off, it will delay 3 minutes to be off).

If there is a water full error, the drain pump will be on when the error occurs. Afterwards:

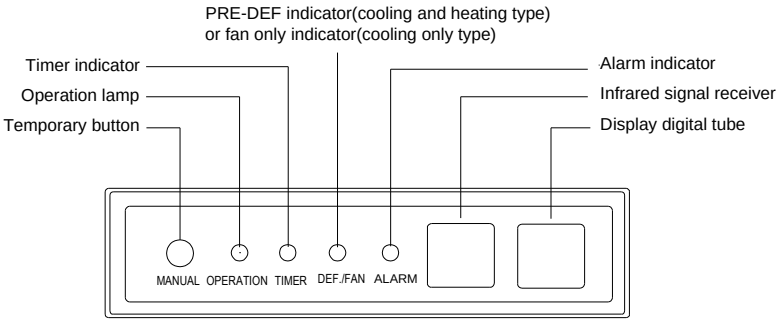
If the error disappears in 3 minutes, the drain pump will work as normal state. (if it is necessary to turn off the pump, it will be off in 1 minute delay.)

If the error is still there in 3 minutes, the drain pump will be off as well as the AC unit. The error can be cleared only when the power of the unit is cut off.

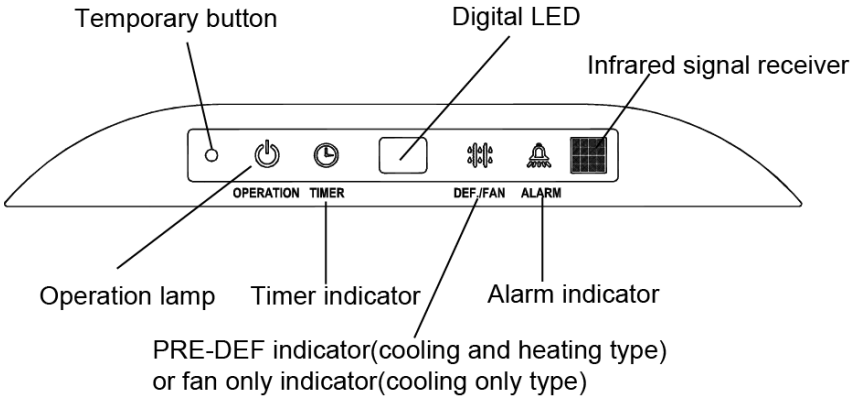
2. Troubleshooting

2.1 Display board

2.1.1 Icon explanation on indoor display board (A5 Duct& High Static Pressure Duct)

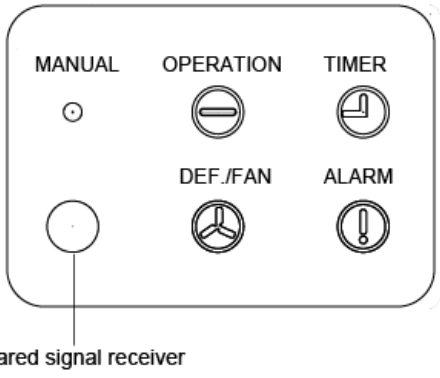


2.1.2 Icon explanation on indoor display board (Super-slim 4-way cassette).



2.1.4 Display board of auto-lifting panel of 4 way cassette

2.1.5 Icon explanation on indoor display board(Ceiling & Floor)



2.2. Self-diagnosis

Indoor unit's LED indication

(1) For Duct

NO.	Malfunction	Running lamp	Timer lamp	Defrosting lamp	Alarm lamp	Display(digital tube)
1	Communication malfunction between indoor and outdoor units	☆	X	☆	X	E1
2	Open or short circuit of T1 temperature sensor	X	☆	X	X	E2
3	Open or short circuit of T2 temperature sensor	☆	X	X	X	E3
4	Outdoor unit malfunction	☆	☆	☆	☆	E6
5	Indoor EEPROM malfunction	☆	☆	X	X	E7
6	Full-water malfunction	X	X	X	☆	E8
7	Indoor fan speed is out of control	X	☆	X	☆	Eb
7	Protection of low pressure	☆	☆	☆	X	Ed
O (on) X(off) ☆(flash at 5Hz)						

For Super-slim 4-way Cassette

NO.	Malfunction	Running lamp	Timer lamp	Defrosting lamp	Alarm lamp	Display(digital tube)
1	Communication malfunction between indoor and outdoor units	☆	X	☆	X	E1
2	Open or short circuit of T1 temperature sensor	X	☆	X	X	E2
3	Open or short circuit of T2 temperature sensor	☆	X	X	X	E3
4	Open or short circuit of T3 temperature sensor	X	X	☆	X	E4
5	Outdoor unit malfunction	☆	☆	☆	☆	E6
6	Indoor EEPROM malfunction	☆	☆	X	X	E7
7	Full-water malfunction	X	X	X	☆	E8
8	Indoor fan speed is out of control	X	☆	X	☆	Eb
9	Protection of low pressure	☆	☆	☆	X	Ed
10	Communication malfunction between main PCB and up-down panel PCB	☆	X	☆	☆	F0
11	Up-down panel malfunction	X	☆	☆	☆	F1
12	Up-down panel is not closed	X	O	☆	☆	F2
O (on) X(off) ☆(flash at 5Hz)						

For Ceiling & Floor

NO.	Malfunction	Running lamp	Timer lamp	Defrosting lamp	Alarm lamp
1	Communication malfunction between indoor and outdoor units	☆	X	☆	X
2	Open or short circuit of T1 temperature sensor	X	☆	X	X
3	Open or short circuit of T2 temperature sensor	☆	X	X	X
4	Open or short circuit of T3 temperature sensor	X	X	☆	X
5	Outdoor unit malfunction	☆	☆	☆	☆
6	Indoor EEPROM malfunction	☆	☆	X	X
7	Full-water malfunction	X	X	X	☆
8	Indoor fan speed is out of control	X	☆	X	☆
9	Protection of low pressure	☆	☆	☆	X

LEDs' for the indication of outdoor trouble

Type	Contents	LED2(Green)	LED3(Yellow)	LED4(Red)
Normal	Normal running	O	X	X
Normal	Normal standby	X	O	X
Trouble	Phase sequence error	X	☆	X
Trouble	Lack of phase	X	X	☆
Trouble	Open-circuit and short-circuit trouble of T3	X	X	O
Trouble	Open-circuit and short-circuit trouble of T4	☆	X	X
Trouble	Temperature protection of compressor discharge	O	X	O
Trouble	Protection of high pressure	☆	☆	X
Trouble	Protection of low pressure	☆	X	☆
Trouble	Overload of current	X	☆	O
Trouble	High temperature protection of condenser	☆	☆	O
Trouble	Fan selection error	☆	☆	☆
O(light) X(off) ☆(flash at 1Hz)				

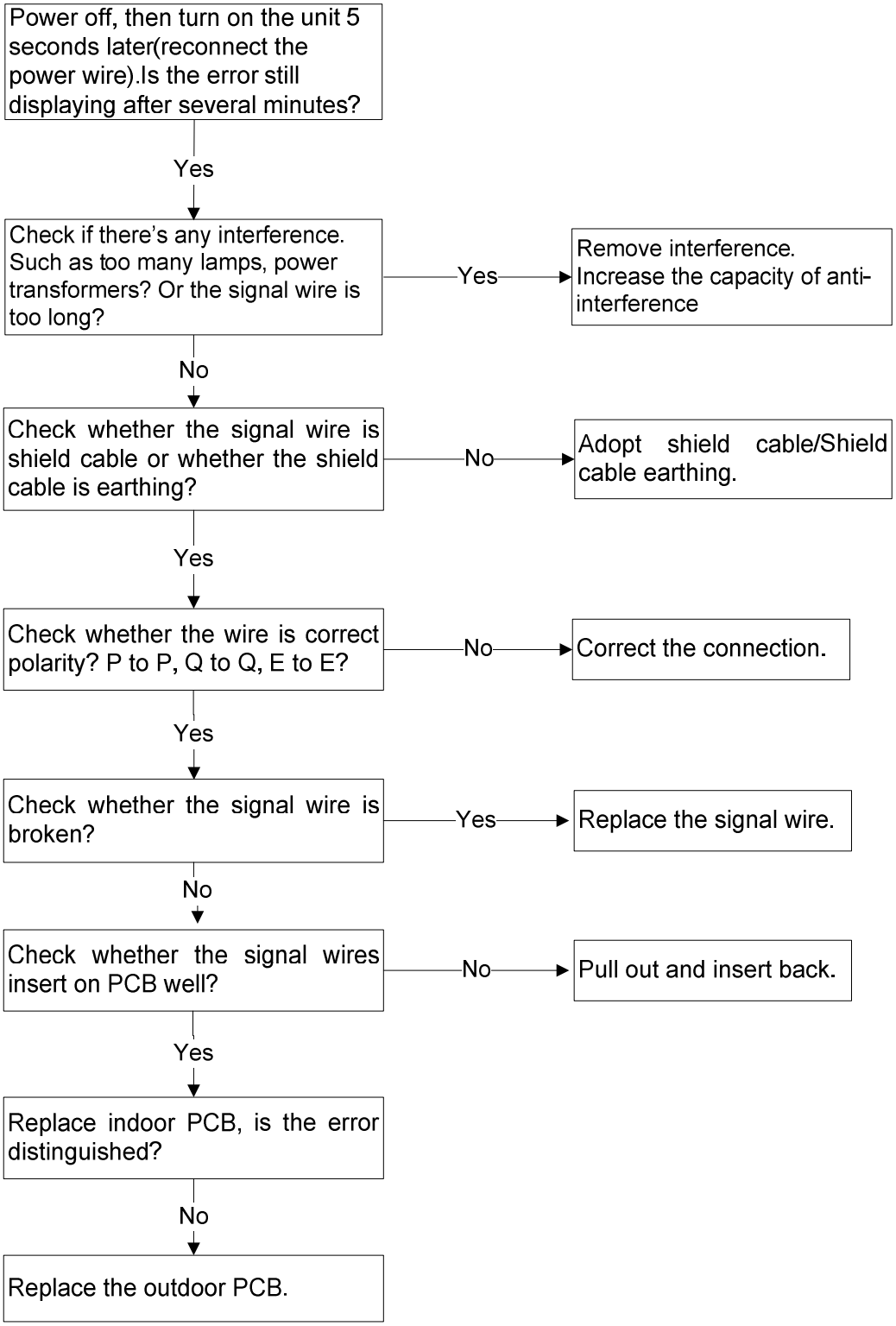
Note:

1. T3: Outdoor condenser temperature sensor
2. T4: Outdoor ambient temperature sensor

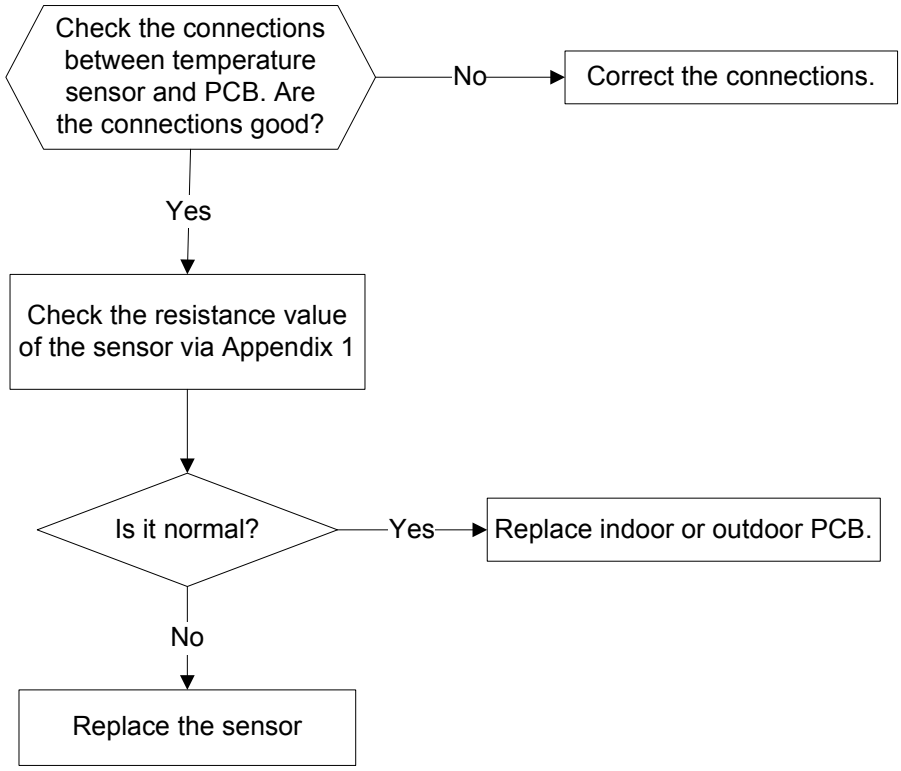
2.3. Solving steps for typical malfunction

(1) For indoor unit

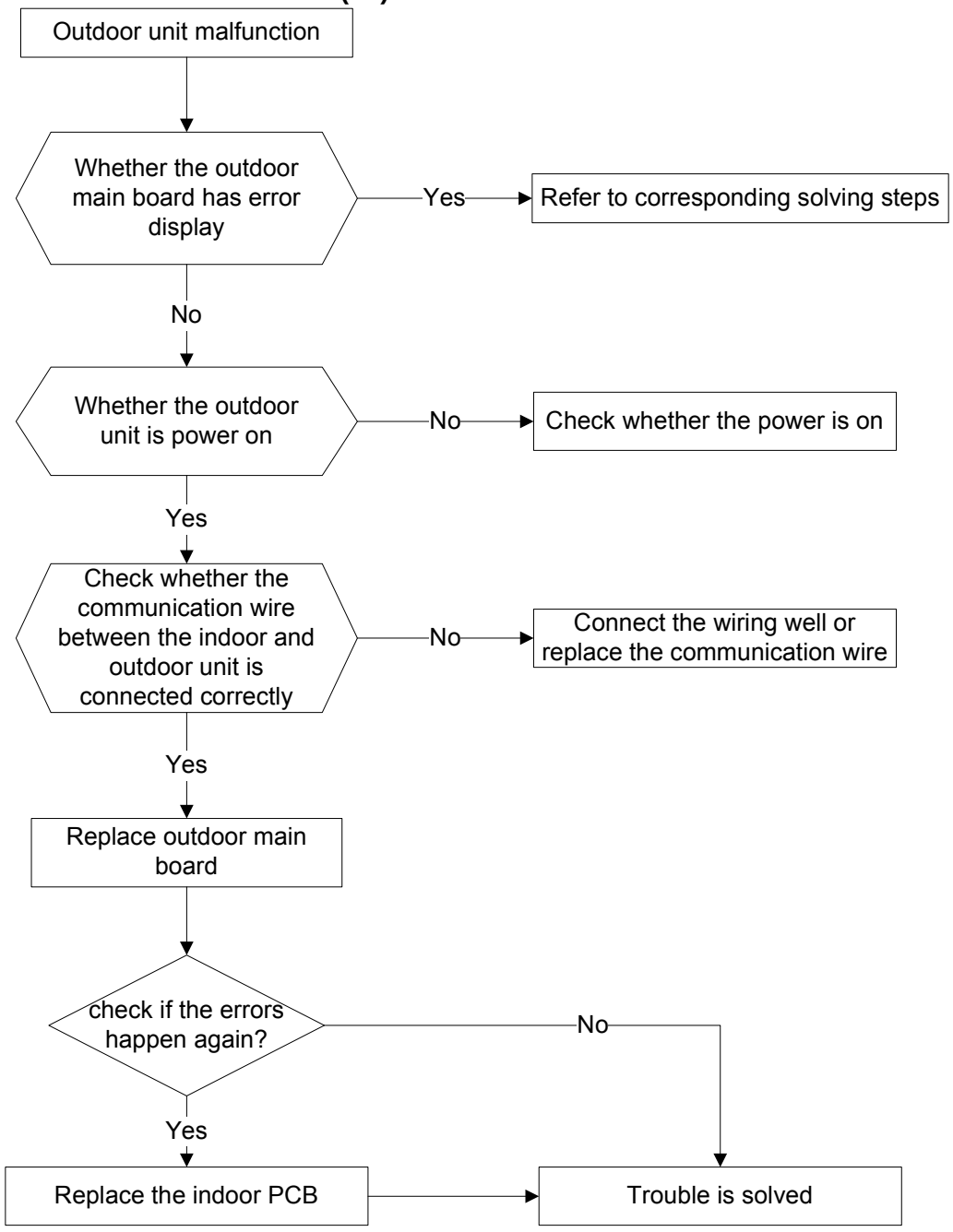
a. Communication malfunction between indoor and outdoor units(E1)


Power off, then turn on the unit 5 seconds later(reconnect the power wire).Is the error still displaying after several minutes?
Yes
Check if there's any interference. Such as too many lamps, power transformers? Or the signal wire is too long?
Yes
Remove interference. Increase the capacity of anti-interference
No
Check whether the signal wire is shield cable or whether the shield cable is earthing?
No
Adopt shield cable/Shield cable earthing.
Yes
Check whether the wire is correct polarity? P to P, Q to Q, E to E?
No
Correct the connection.
Yes
Check whether the signal wire is broken?
Yes
Replace the signal wire.
No
Check whether the signal wires insert on PCB well?
No
Pull out and insert back.
Yes
Replace indoor PCB, is the error distinguished?
No
Replace the outdoor PCB.

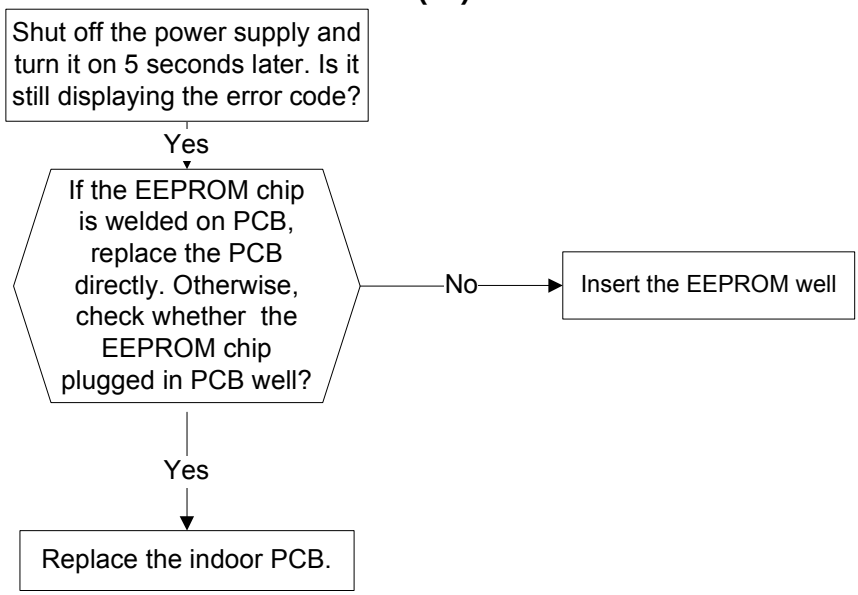
b. Open or short circuit of temperature sensor（E2，E3, E4）


Check the connections between temperature sensor and PCB. Are the connections good?
No
Correct the connections.
Yes
Check the resistance value of the sensor via Appendix 1
Is it normal?
Yes
Replace indoor or outdoor PCB.
No
Replace the sensor

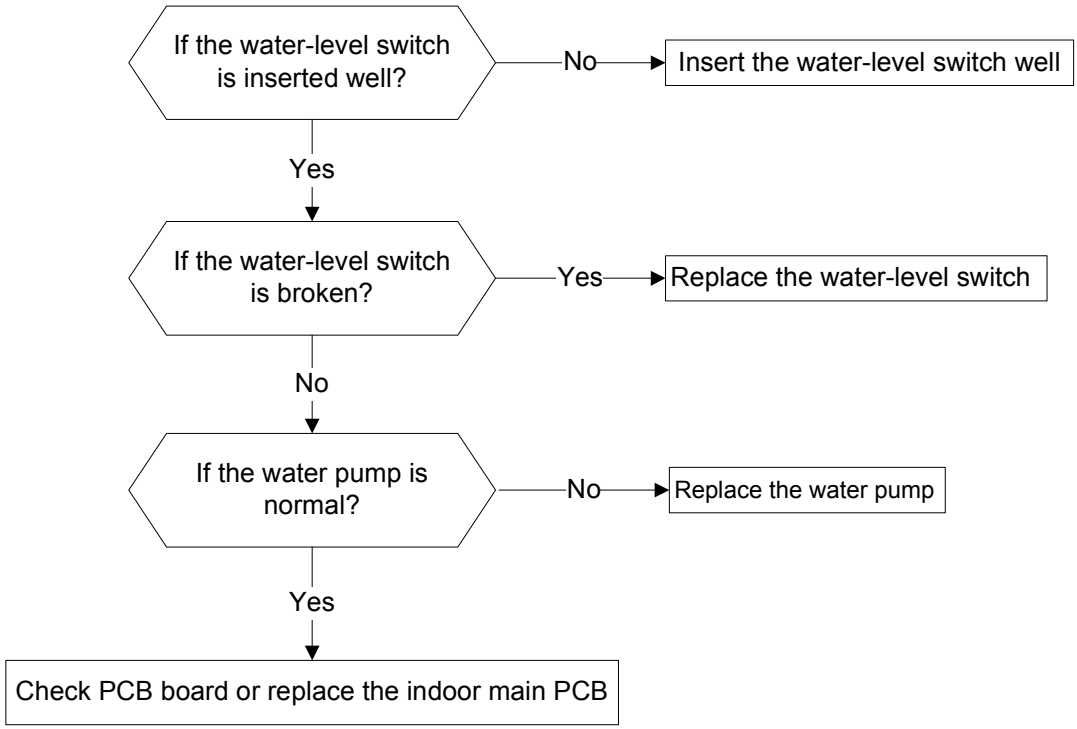
c. Outdoor unit malfunction(E6)


Outdoor unit malfunction
Whether the outdoor main board has error display
Yes
Refer to corresponding solving steps
No
Whether the outdoor unit is power on
No
Check whether the power is on
Yes
Check whether the communication wire between the indoor and outdoor unit is connected correctly
No
Connect the wiring well or replace the communication wire
Yes
Replace outdoor main board
check if the errors happen again?
No
Yes
Replace the indoor PCB
Trouble is solved

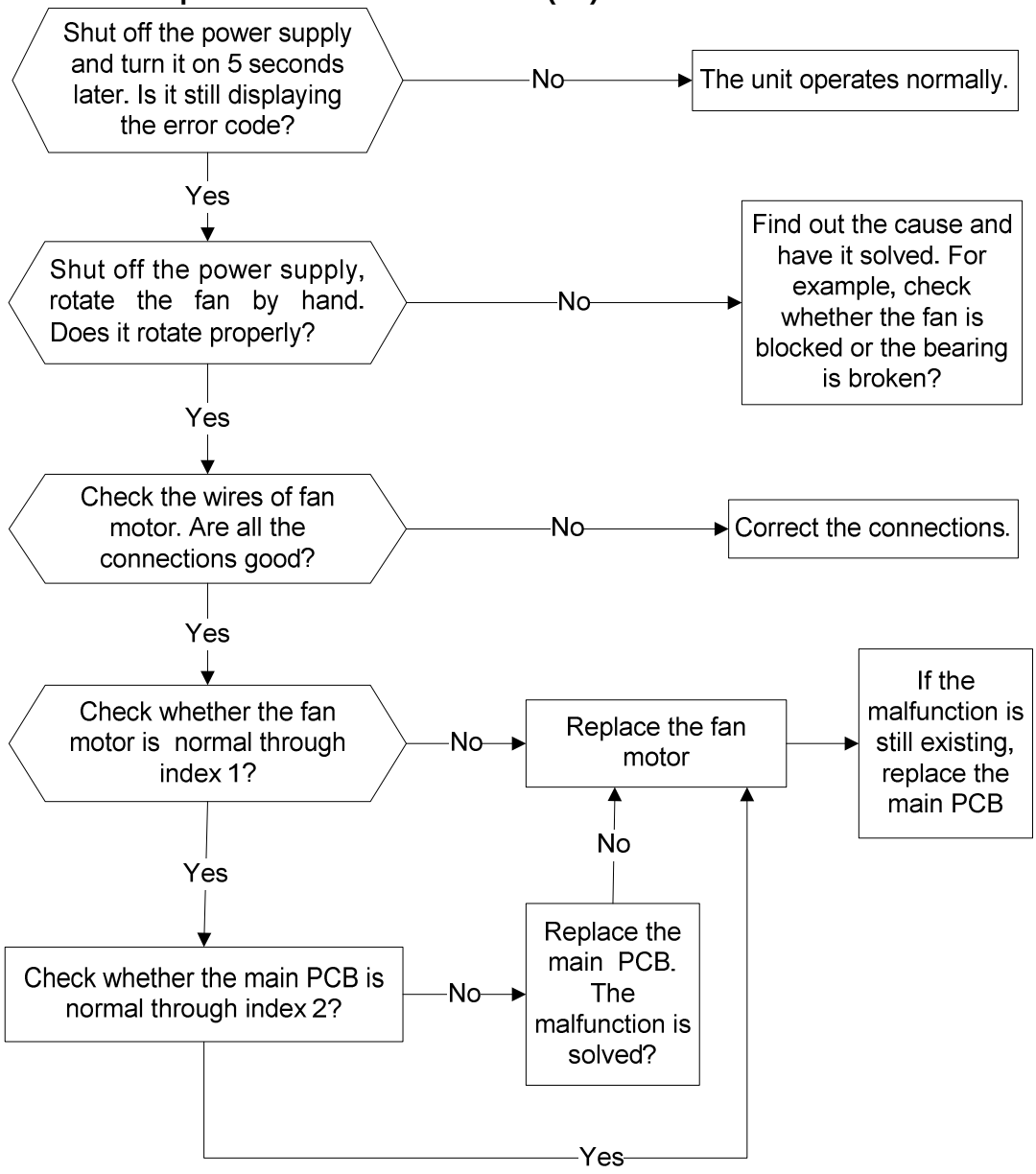
d. Indoor EEPROM malfunction(E7)


Shut off the power supply and turn it on 5 seconds later. Is it still displaying the error code?
Yes
If the EEPROM chip is welded on PCB, replace the PCB directly. Otherwise, check whether the EEPROM chip plugged in PCB well?
No
Insert the EEPROM well
Yes
Replace the indoor PCB.

e. Full-water malfunction(E8)



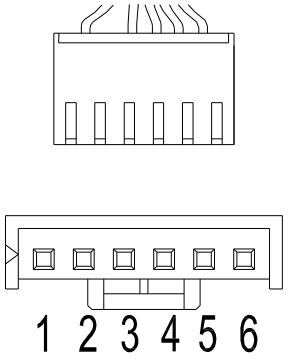
f. Indoor fan speed has been out of control(Eb)


Shut off the power supply and turn it on 5 seconds later. Is it still displaying the error code?
No
The unit operates normally.
Yes
Shut off the power supply, rotate the fan by hand. Does it rotate properly?
No
Find out the cause and have it solved. For example, check whether the fan is blocked or the bearing is broken?
Yes
Check the wires of fan motor. Are all the connections good?
No
Correct the connections.
Yes
Check whether the fan motor is normal through index 1?
No
Replace the fan motor
If the malfunction is still existing, replace the main PCB
Yes
No
Check whether the main PCB is normal through index 2?
No
Replace the main PCB. The malfunction is solved?
Yes

Index 1:

1.Indoor DC fan motor(control chip is inside fan motor)

Measure the resistance value of each winding by using the tester. If any resistance value is zero, the fan motor must have problems and need to be replaced.

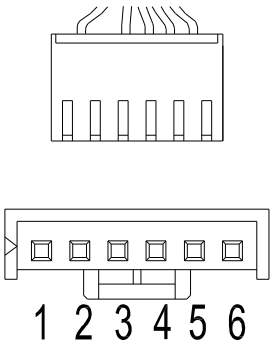


NO.	Color
1	Red
2	---
3	Black
4	White
5	Yellow
6	Blue

Index2:

1. DC fan motor(control chip is inside fan motor)

Power on and when the unit is in standby, measure the voltage of pin1-pin3, pin4-pin3 in fan motor connector. If the value of the voltage is not in the range showing in below table, the PCB must have problems and need to be replaced.



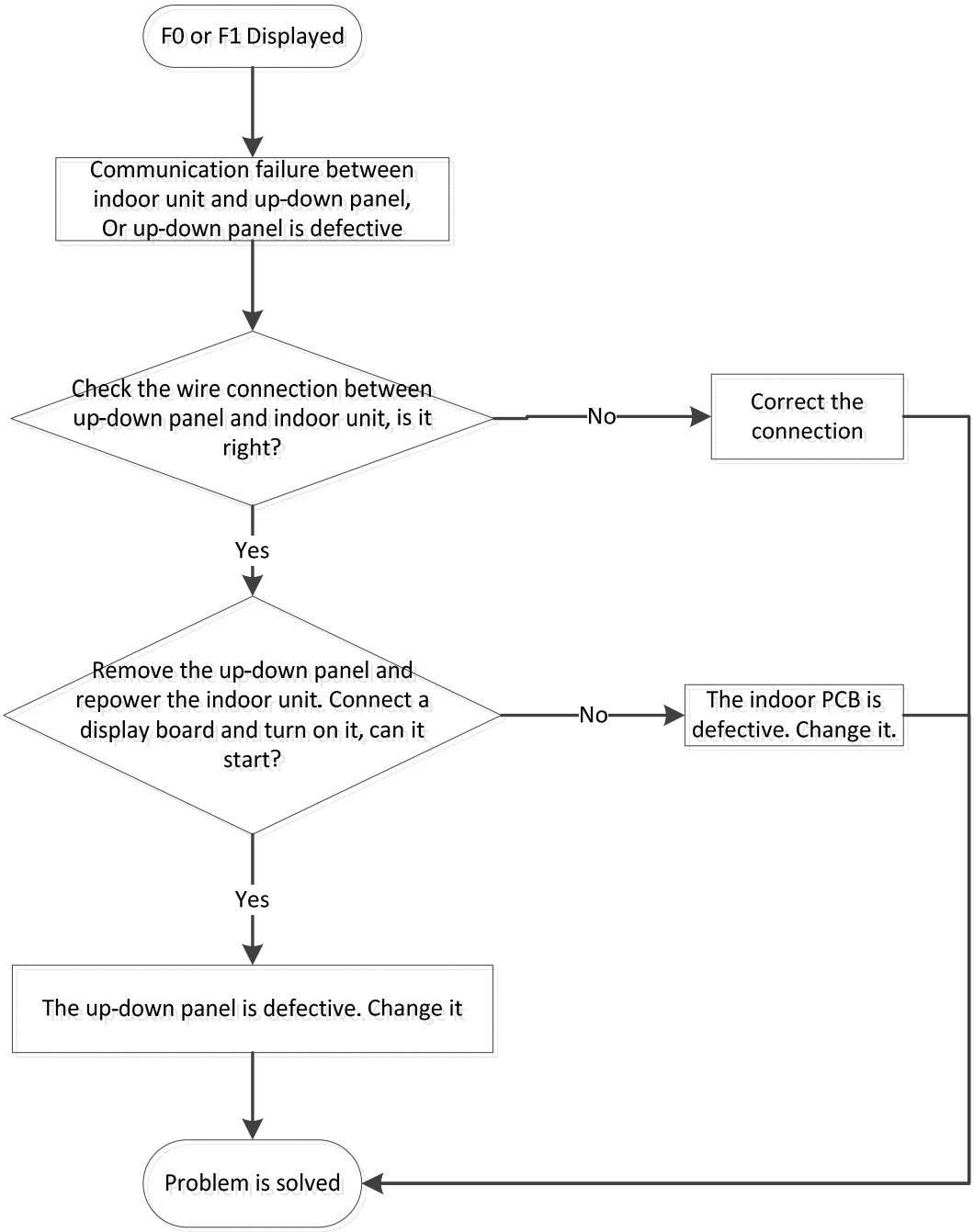
DC motor voltage input and output

NO.	Color	Signal	Voltage
1	Red	Vs/Vm	140~380V
2	---	---	---
3	Black	GND	0V
4	White	Vcc	13.5~16.5V
5	Yellow	Vsp	0~6.5V
6	Blue	FG	15V

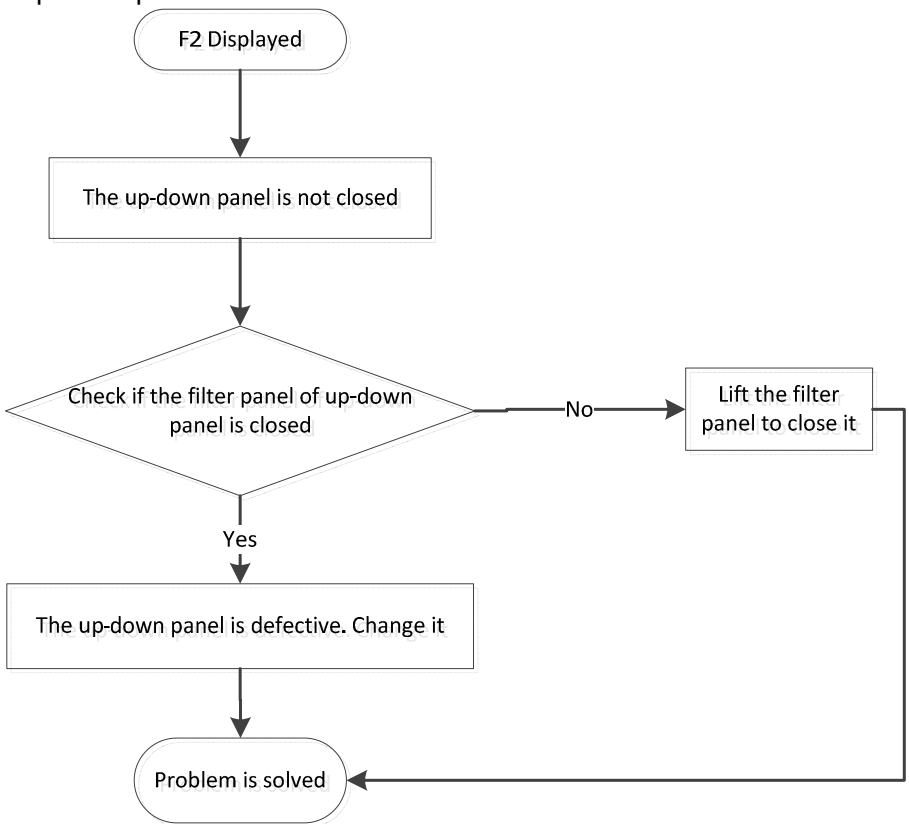
For the super-slim cassette with up-down panel

a. Communication error between indoor unit and up-down panel

b. Up-down panel is defective

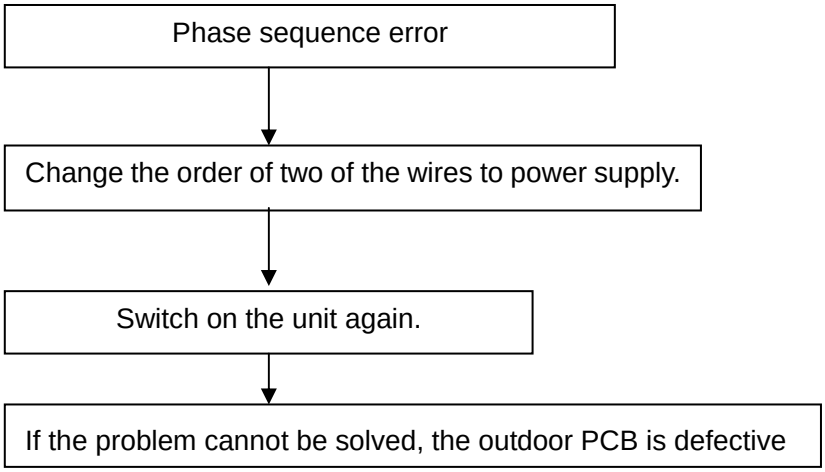

F0 or F1 Displayed
Communication failure between indoor unit and up-down panel, Or up-down panel is defective
Check the wire connection between up-down panel and indoor unit, is it right?
No
Correct the connection
Yes
Remove the up-down panel and repower the indoor unit. Connect a display board and turn on it, can it start?
No
The indoor PCB is defective. Change it.
Yes
The up-down panel is defective. Change it
Problem is solved

c Up-down panel is not closed

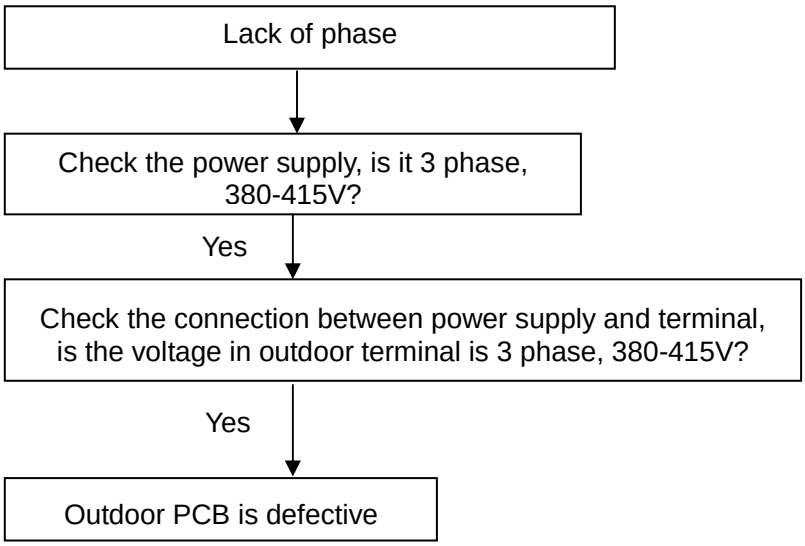

F2 Displayed
The up-down panel is not closed
Check if the filter panel of up-down panel is closed
No
Lift the filter panel to close it
Yes
The up-down panel is defective. Change it
Problem is solved

(2) For the outdoor unit

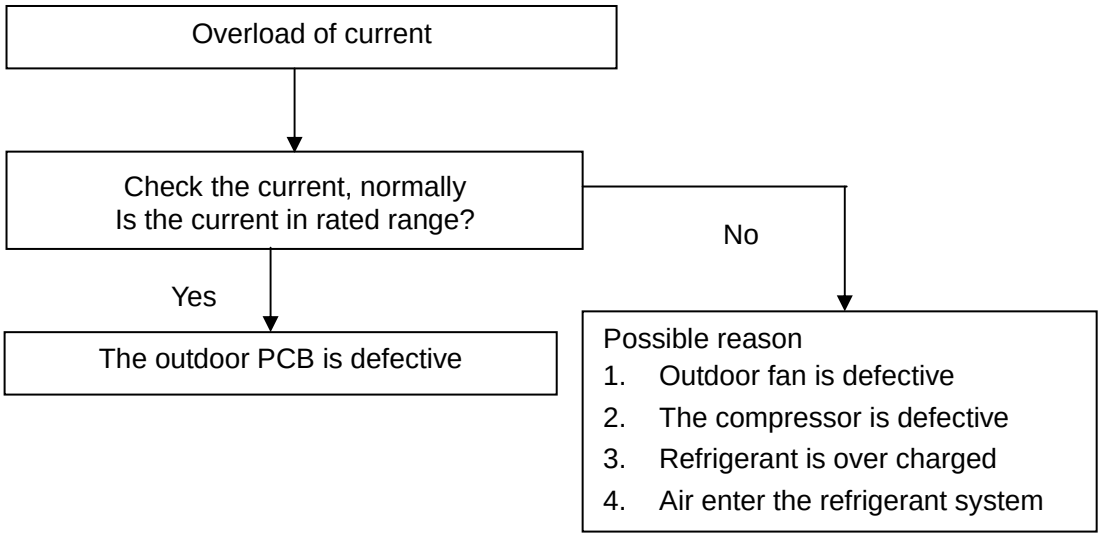
a. Phase sequence error:


Phase sequence error
Change the order of two of the wires to power supply.
Switch on the unit again.
If the problem cannot be solved, the outdoor PCB is defective

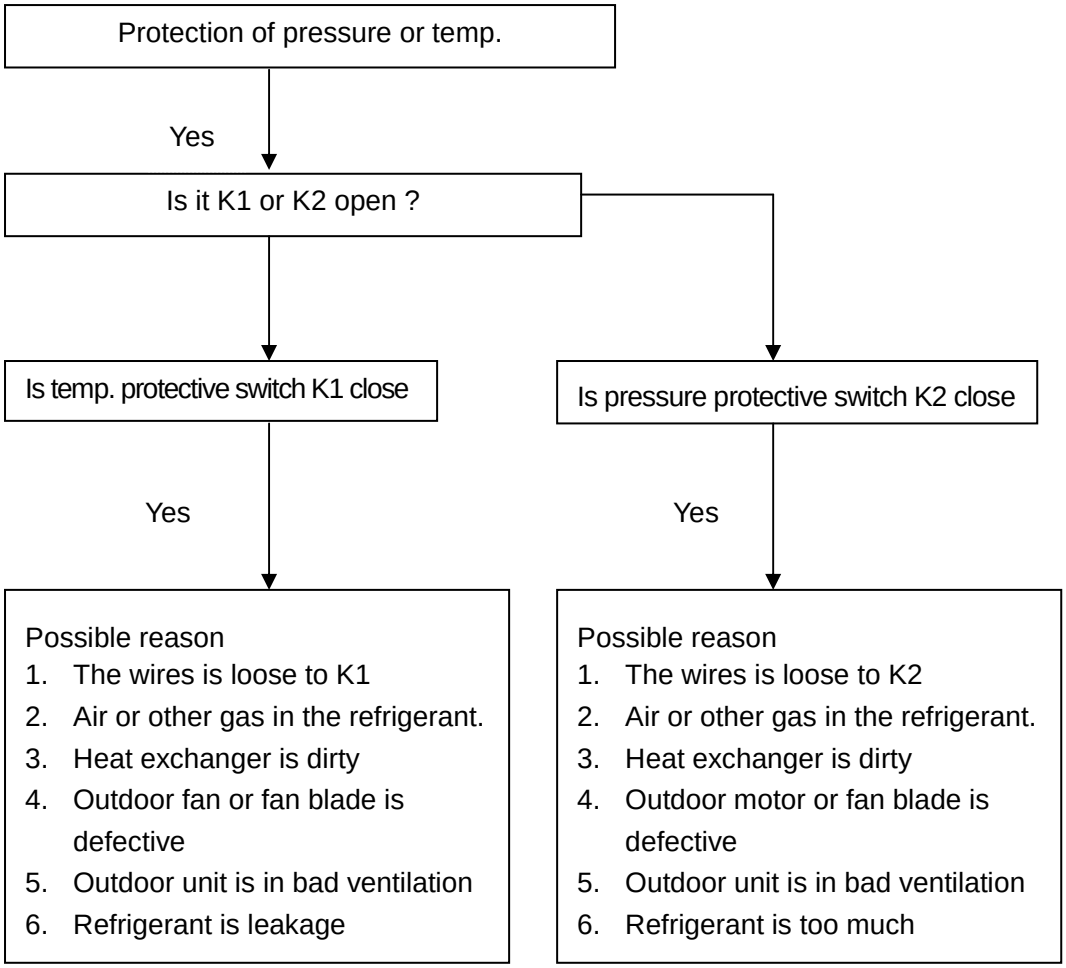
b. Lack of phase


Lack of phase
Check the power supply, is it 3 phase, 380-415V?
Yes
Check the connection between power supply and terminal, is the voltage in outdoor terminal is 3 phase, 380-415V?
Yes
Outdoor PCB is defective

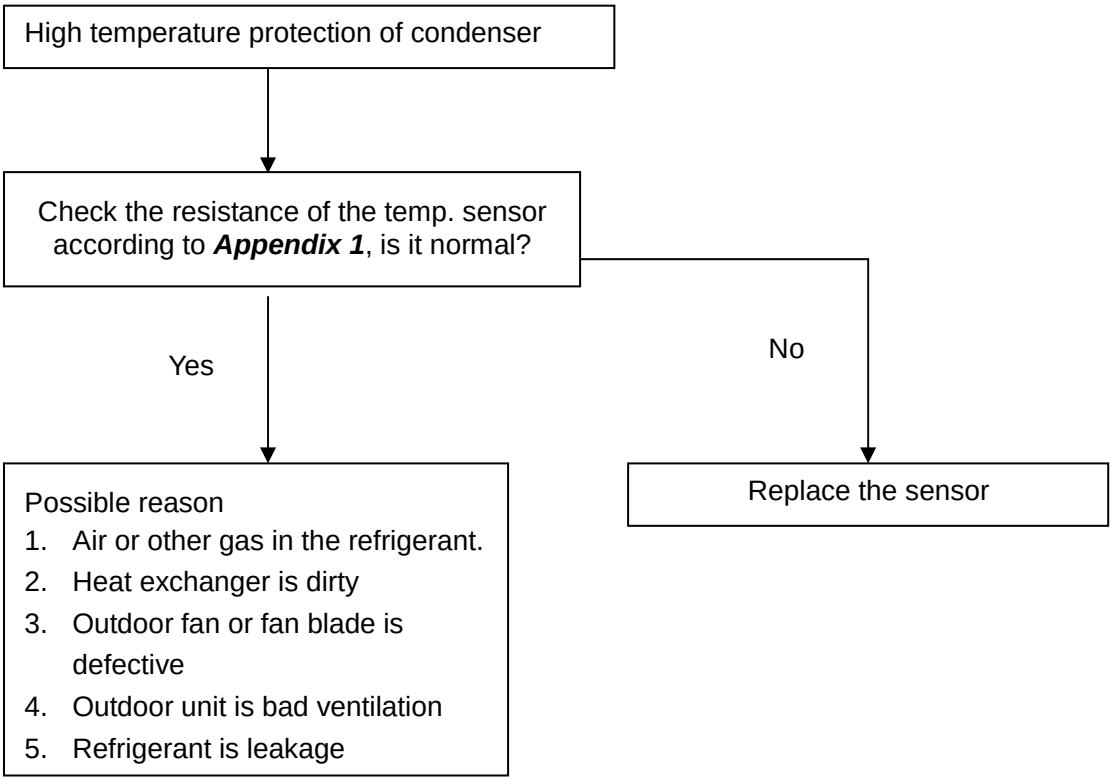
c. Overload of current



d. Protection of pressure or temp.


Protection of pressure or temp.
Yes
Is it K1 or K2 open ?
Is temp. protective switch K1 close
Is pressure protective switch K2 close
Yes
Yes
Possible reason
1. The wires is loose to K1
2. Air or other gas in the refrigerant.
3. Heat exchanger is dirty
4. Outdoor fan or fan blade is defective
5. Outdoor unit is in bad ventilation
6. Refrigerant is leakage
Possible reason
1. The wires is loose to K2
2. Air or other gas in the refrigerant.
3. Heat exchanger is dirty
4. Outdoor motor or fan blade is defective
5. Outdoor unit is in bad ventilation
6. Refrigerant is too much

e. High temperature protection of condenser

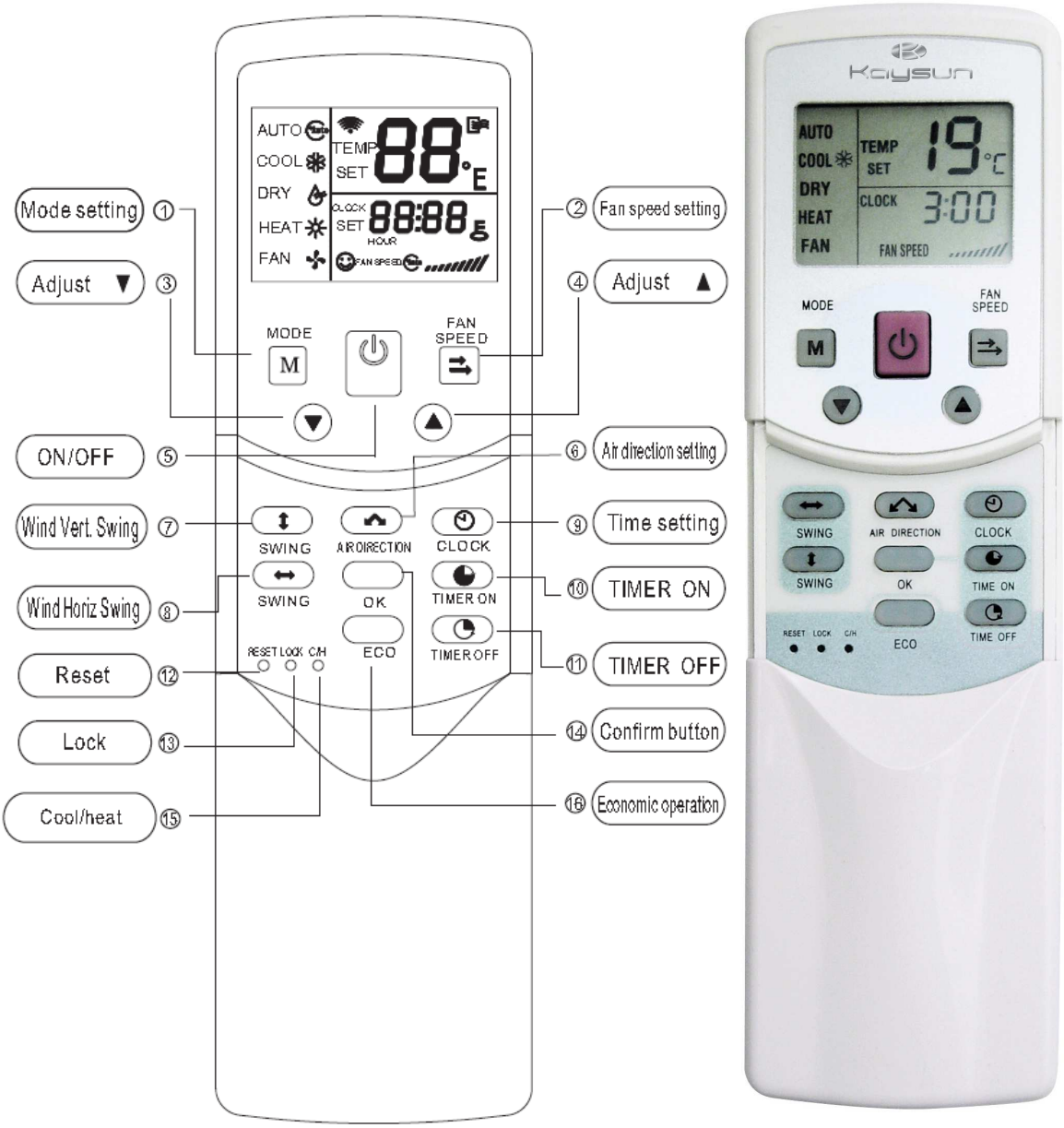

High temperature protection of condenser
Check the resistance of the temp. sensor according to ***Appendix 1***, is it normal?
Yes
No
Possible reason
1. Air or other gas in the refrigerant.
2. Heat exchanger is dirty
3. Outdoor fan or fan blade is defective
4. Outdoor unit is bad ventilation
5. Refrigerant is leakage
Replace the sensor

Appendix 1 Temperature Sensor Resistance Value Table (℃--K)

℃	K Ohm	℃	K Ohm	℃	K Ohm	℃	K Ohm
-20	115.266	20	12.6431	60	2.35774	100	0.62973
-19	108.146	21	12.0561	61	2.27249	101	0.61148
-18	101.517	22	11.5000	62	2.19073	102	0.59386
-17	96.3423	23	10.9731	63	2.11241	103	0.57683
-16	89.5865	24	10.4736	64	2.03732	104	0.56038
-15	83.2190	25	10.000	65	1.96532	105	0.54448
-14	79.3110	26	9.55074	66	1.89627	106	0.52912
-13	73.5360	27	9.12445	67	1.83003	107	0.51426
-12	70.1698	28	8.71983	68	1.76647	108	0.49989
-11	66.0898	29	8.33566	69	1.70547	109	0.48600
-10	62.2756	30	7.97078	70	1.64691	110	0.47256
-9	58.7079	31	7.62411	71	1.59068	111	0.45957
-8	56.3694	32	7.29464	72	1.53668	112	0.44699
-7	52.2438	33	6.98142	73	1.48481	113	0.43482
-6	49.3161	34	6.68355	74	1.43498	114	0.42304
-5	46.5725	35	6.40021	75	1.38703	115	0.41164
-4	43.0000	36	6.13059	76	1.34105	116	0.40060
-3	41.5878	37	5.87359	77	1.29078	117	0.38991
-2	39.8239	38	5.62961	78	1.25423	118	0.37956
-1	37.1988	39	5.39689	79	1.21330	119	0.36954
0	35.2024	40	5.17519	80	1.17393	120	0.35982
1	33.3269	41	3.96392	81	1.13604	121	0.35042
2	31.5635	42	3.76253	82	1.09958	122	0.3413
3	29.9058	43	3.57050	83	1.06448	123	0.33246
4	28.3459	44	3.38736	84	1.03069	124	0.32390
5	26.8778	45	3.21263	85	0.99815	125	0.31559
6	25.4954	46	3.04589	86	0.96681	126	0.30754
7	23.1932	47	3.88673	87	0.93662	127	0.29974
8	22.5662	48	3.73476	88	0.90753	128	0.29216
9	21.8094	49	3.58962	89	0.87950	129	0.28482
10	20.7184	50	3.45097	90	0.85248	130	0.27770
11	19.6891	51	3.31847	91	0.82643	131	0.27078
12	18.7177	52	3.19183	92	0.80132	132	0.26408
13	17.8005	53	3.07075	93	0.77709	133	0.25757
14	16.9341	54	2.95896	94	0.75373	134	0.25125
15	16.1156	55	2.84421	95	0.73119	135	0.24512
16	15.3418	56	2.73823	96	0.70944	136	0.23916
17	13.6181	57	2.63682	97	0.68844	137	0.23338
18	13.9180	58	2.53973	98	0.66818	138	0.22776
19	13.2631	59	2.44677	99	0.64862	139	0.22231

3. Controller

3.1 KI-01 Wireless Remote Controller (Optional)



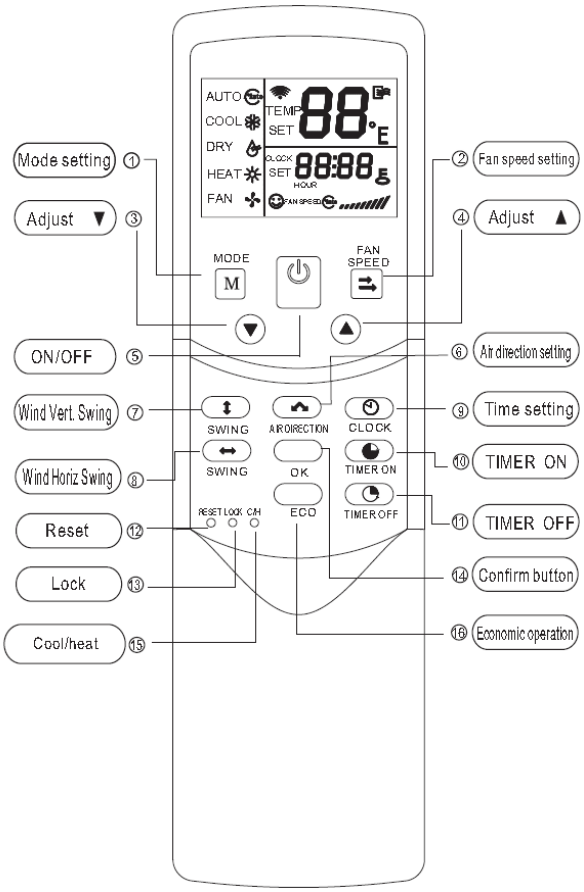
MODEL AND SPECIFICATION

Model	R05/BGE RM05/BGE(T) RM05/BG(T)E-A
Rated voltage	3.0V(2 pieces of LR03 7# batteries)
Min voltage for sending signal of CPU	2.4V
Effective receiving distance	8m～11m
Operation condition	-5~60°C

3.1.1 PRECAUTIONS

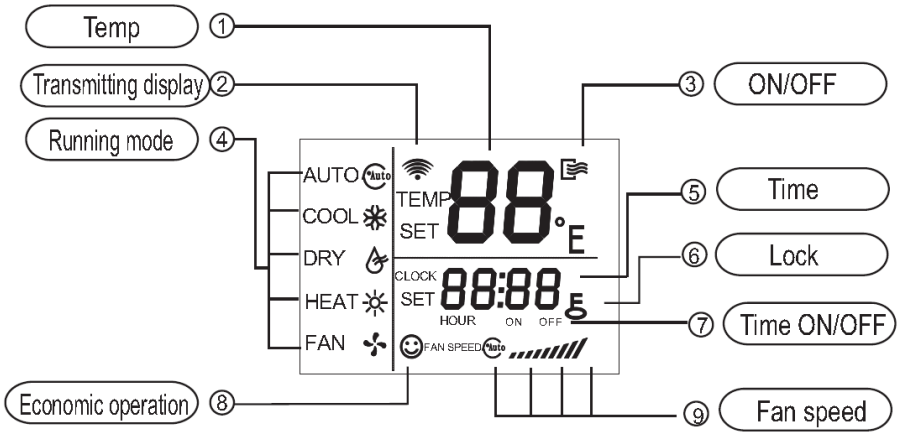
Curtain, door or the like objects will prevent the remote signal from being received by air conditioner.
Do not get the interior of remote controller wet. It is forbidden to expose it to direct sunlight or locate it in the place with high temp.
Malfunction may occur if infrared signal receiver on air conditioner is exposed to sunlight. Please shelter the signal receiver from sunlight with curtain.
Please remove the nearby electronic device for they may affect the performance of remote controller.
Do not put the used or different batteries into the remote controller, otherwise remote controller will fail to send signal.
Please remove the batteries before long period unused, otherwise the remote controller may be damaged.
If pressing the button reset the remote controller, which indicates low battery, please replace the batteries.
If no receiving sound is heard from indoor unit or on remote controller does not flash, please replace the batteries.
Effective transmitting distance of remote controller is 8m, please aim the signal sending part to the receiver on air conditioner.

3.1.2 BUTTONS AND THEIR FUNCTIONS



MODE: Once pressing, running mode will be selected in the following sequence:
AUTO► COOL► DRY► HEAT ►FAN
FAN SPEED: Fan speed will be selected in following sequence once pressing this button:
AUTO► LOW► MED► HIGH
Adjust ▲Increase the set temp. Keeping pressing will increase the temp with 1ºC per 0.5s.
Adjust▼ : Decrease the set temp. Keeping pressing will decrease the temp with 1ºC per 0.5s.
ON/OFF: For turning on or turning off the air conditioner.
AIR DIRECTION: Activate swing function of air deflector. Once pressing, air deflector will turn 6 . For normal operation and better cooling and heating effect, deflector will not turn to the degree which is the state of deflector when the unit is turned off.(Only available when remote controller is used with corresponding unit.)
Wind Vert Swing: Activate or turn off wind vertical swing function. (Only available when remote controller is used with corresponding unit.)
Wind Horiz Swing: Activate or turn off wind horizontal swing function. (Only available when remote controller is used with corresponding unit.)
CLOCK: Display the current time. (12:00 is displayed when resetting or electrifying for the first time.) Press CLOCK for 5s, icon indicating hour will flash with 0.5s. Press it again, icon indicating minute will flash with 0.5s▼. and ▲are used to adjust the figure. Setting or modification is effective only by pressing OK button to make confirmation.
TIME ON: For time ON setting. Once pressing this button, the time will increase by 0.5 hour. When the set time exceeds 10 hours, pressing the button will increase the time by 1 hour. Adjusting the figure to 0.00 will cancel time ON setting.
TIME OFF: For time OFF setting. Once pressing this button, the time will increase by 0.5 hour. When the set time exceeds 10 hours, pressing the button will increase the time by 1 hour.
Adjust the figure to 0.00 will cancel time ON setting.
RESET (inner located): Press this button with a needle of 1mm to cancel the current setting and reset remote controller.
LOCK (inner located): Press this button with a needle of 1mm to lock or unlock the current setting.
OK: Used to confirm the time setting and modification.
COOL/HEAT (inner located): Press this button with a needle of 1mm to shift mode between COOL only and COOL&HEAT. During setting, back light will be lightened. Factory default mode is COOL &HEAT.
ECO: Activate or turn off economic operation mode. It is suggested to turn on this function when sleeping. (Only available when remote controller is used with corresponding unit.)

3.1.3 INDICATORS AND FUNCTIONS



Temp: Display the set temperature. Adjust temperature via ▲and ▼. No display in this area if the unit is on FAN mode.
Transmitting display: The icon will flash once when the signal is sent by remote controller.
ON/FF: Icon is displayed when the remote controller is turned on, or vice versa.
Running mode: Press MODE to display current running mode.
AUTO, COOL, DRY, HEAT and FAN can be selected.
Time: Display the current set time. Press CLOCK for 5s, icon indicating hour will flash. Press this button again, icon indicating minute will flash. ▲And ▼are used to adjust the figure. Setting or modification is effective only by pressing OK button to make confirmation.
Lock: The icon will be lightened or off when pressing LOCK.
In locked state, all the buttons are ineffective except button LOCK.
Time ON/OFF: In the state of time ON, icon ON will be lightened, which is the same to the state of time OFF.
Setting timer ON and OFF simultaneously, both icons ON and OFF are displayed.
Fan speed: Press FAN SPEED to display the current wind speed. AUTO, LOW, MED and HIGH can be selected. The default state is high fan speed for the unit without medium fan speed.
Economic operation: This icon will be lightened or off when pressing ECO button.
NOTE: All the above icons will be displayed only when the remote controller is electrified for the first time or reset.

3.1.4 OPERATION INSTRUCTIONS

Install and replace batteries

Install 2 pieces of 7# alkaline batteries.

Slide the cover to install batteries and make sure to place them in right pole.

AUTO operation

Switch on the power and running indicator light on indoor unit flashes.

1. Press MODE to select AUTO.
2. Adjust temp via▲ and ▼. Generally the range is 17ºC ~30ºC .
3. Press ON/OFF and running indicator light on indoor unit is lightened. Air conditioner will work on AUTO mode and fan speed is AUTO which is nonadjustable.
4. ECO is effective on AUTO operation.

COOL/HEAT/FAN operation

1. Press MODE to select COOL, HEAT or FAN.
2. Adjust temp via▲ and ▼. Generally the range is 17ºC ~30ºC .
3. Press FAN SPEED to select AUTO, LOW, MED or HIGH.
4. Press ON/OFF and running indicator light on indoor unit is lightened. Air conditioner will work on the set mode. Stop operation via ON/OFF.

NOTE: On FAN mode, temp is nonadjustable and ECO is ineffective. Procedure 2 is omitted.

DRY operation

1. Press MODE to select DRY.
2. Adjust temp via ▲and ▼. Generally the range is 17 ~30ºC .
3. Press ON/OFF and running indicator light on indoor unit is lightened. Air conditioner will work on DRY mode. Turn off the unit via ON/OFF.
4. On DRY mode, ECO and FAN SPEED are unavailable.

Timer operation

TIMER ON and TIMER OFF are used to turn on and turn off the unit at the set time respectively.

TIME ON operation

1. Press TIMER ON, icon SET, HOUR and ON are lightened.
2. Press TIMER ON again and adjust the time.
3. Keep pressing this button, the time will increase by 0.5 hour. When the set time exceeds 10 hours, pressing the button will increase the time by 1 hour.
4. 0.5s after setting, remote controller will send TIME ON command to the unit.

TIME OFF operation

1. Press TIME OFF, icon SET, HOUR and OFF are lightened.
2. Press TIME OFF again and adjust the time.
3. Keep pressing this button, the time will increase by 0.5 hour. When the set time exceeds 10 hours, pressing the button will increase the time by 1 hour.
4. 0.5s after setting, remote controller will send TIME OFF command to the unit.

Set TIME ON and TIME OFF simultaneously

1. Set TIME ON according to procedures 1 and 2 specified in. **TIME ON operation**
2. Set TIME OFF as the procedures 1 and 2 specified in **TIME OFF operation**
3. If both the set time of TIME ON and TIME OFF not exceed 10 hours, time OFF operation will activated 0.5 hour later than time ON operation. If both the set time of TIME ON and TIME OFF exceed 10 hours, time OFF operation will be activated 1 hour later than time ON operation.
4. 0.5s after setting, remote controller will send TIME ON command to the unit.

Modification of timer operation

Press corresponding button and readjust the time of time ON and time OFF. Adjust the time figure to 0.00 to cancel the timer operation.

NOTE: The time set in timer operation is the relative figure based on the clock on remote controller. Adjusting clock is unavailable when TIME ON or TIME OFF is activated.

3.2 KC-01.2 R Wired IR Remote Controller (Optional)

3.2.1 Safety precautions

Read the safety precautions carefully before installing the unit.
Stated below are important safety issues that must be obeyed.

WARNING

Means improper handling may lead to personal severe injury.

CAUTION

Means improper handling may lead to personal injury or property loss.

WARNING

Please entrust the distributor or professionals to install the unit.
Installation by other persons may lead to imperfect installation, electric shock or fire.
Adhere to this installation manual.
Improper installation may lead to electric shock or fire.
Reinstallation must be performed by professionals.
Improper installation may lead to electric shock or fire.
Do not uninstall the unit randomly.
Random uninstalling may lead to abnormal operation, heating or fire of the air condition.

NOTE: Do not install the unit in a place vulnerable to leakage of flammable gases.
Once flammable gases are leaked and left around the wire controller, fire may occur.
The wiring should adapt to the wire controller current.
Otherwise, electric leakage or heating may occur and result in fire.
The specified cables shall be applied in the wiring. No external force may be applied to the terminal.
Otherwise, wire cut and heating may occur and result in fire.

3.2.2 Installation accessory

Select the installation location

Don’t install at the place where contents with heavy oil, vapor or sulphurous gas, otherwise, this product would be deformed that would lead to system malfunction.

Preparation before installation

1. Please confirm that all the following parts you have been supply.

No.	Name	Qty.	Remark
1	Wire controller	1	
2	Cruciform slot screwM4×25	2	This accessory is used when install the wire control inside the electric cabinet
3	Plastic bolt	2	
4	Installation and owner's manual	1	
5	The connective wires of signal received panel (on some models)	1	For connect between the signal received wire and shielded 5-core cable

2. Please filed install the following accessory.

No.	Name	Qty.	Remark
1	Electric cabinet	1	Universal electric cabinet's specification. Pre-embed it into wall.
2	Shielded 5-core cable	1	Pre-embed RVVP-0.5mm2x5 into wall.
3	Wire configured tube (insulated sheath)	1	Pre-embed into wall, the longest length should not exceeding than 15m.
4	Phillips screwdriver	1	For install Cruciform slot screw.
5	Slotted head screwdriver	1	For unscrew the bottom cover of wire controller.

Precaution of install the wire control

1. This manual provides the installation method of wire controller. Please refer to the wiring diagram of this installation manual to wire the wire controller with indoor unit.

3. The Shielded wire of the wire controller must be grounded reliable.

4. After finishing the wire controller connection, do not employ a tramegger to detect the insulation.

2. The wire controller working in low voltage loop circuit. Avoid to directly contact the cable of 220Vcommercial electricity or of 380V high voltage, and don’t wire this kind of wire in the said loop; wiring clearance between configured tubes should at the range of 300~500 or above.

3.2.3 Installation method

Simplified schematic of wire controller

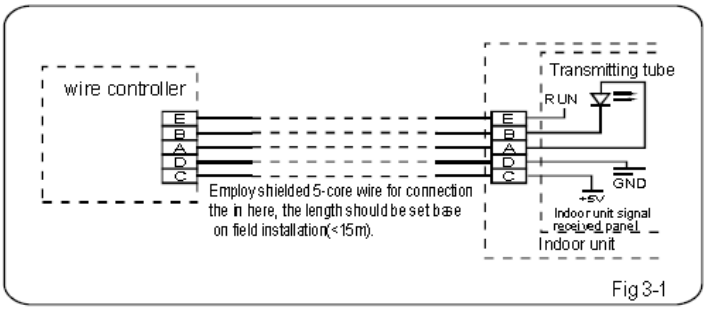
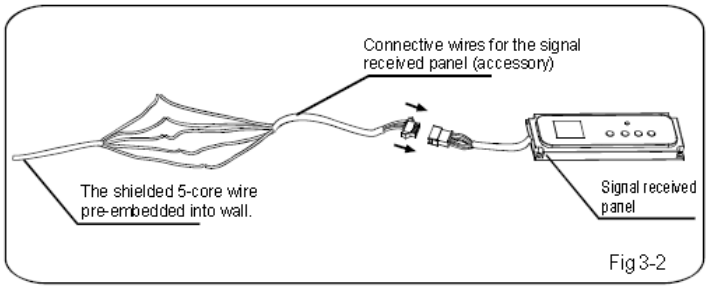


Fig 3-1

Installation diagram


Connective wires for the signal received panel (accessory)
The shielded 5-core wire pre-embedded into wall.
Signal received panel
Fig 3-2

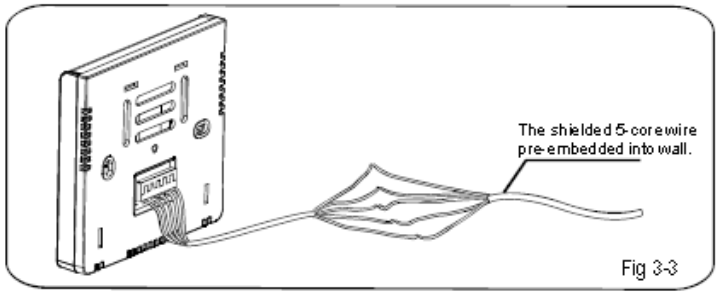


Fig 3-3

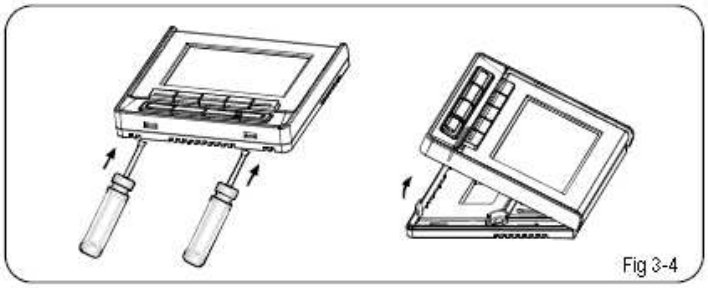


Fig 3-4

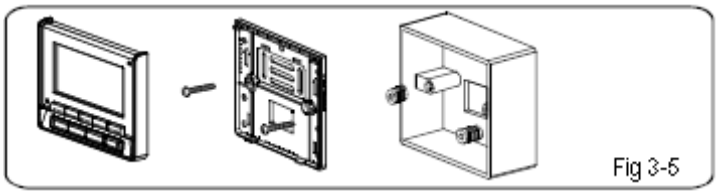


Fig 3-5

1. Connect the male joint of 5-core wires group of the signal received panel with the female 5-core terminal of signal received panel. (See Fig.3-2)

5. Adjust the length of two plastic bolts base on the length of throughout from standard electric cabinet to the wall. Confirm the two bolts fixing in the cabinet are in the same length and vertical to the wall surface.

6. Fix the bottom cover to the electric cabinet by the accessory slotted head screws. Confirm the bottom cover is parallel to wall surface. And then reinstall the bottom cover to centralized controller. (See fig 3-5)

2. Please connect the other side of signal received panel with the wall pre-bedded 5-core cable reliability.

3. Connect the wire control leads from wire controller with the wall pre-bedded 5-core cable reliability. (See Fig.3-3)

4. Take off the screws in the bottom cover of centralized controller by slotted head screw driver. (See Fig 3-4)

NOTE

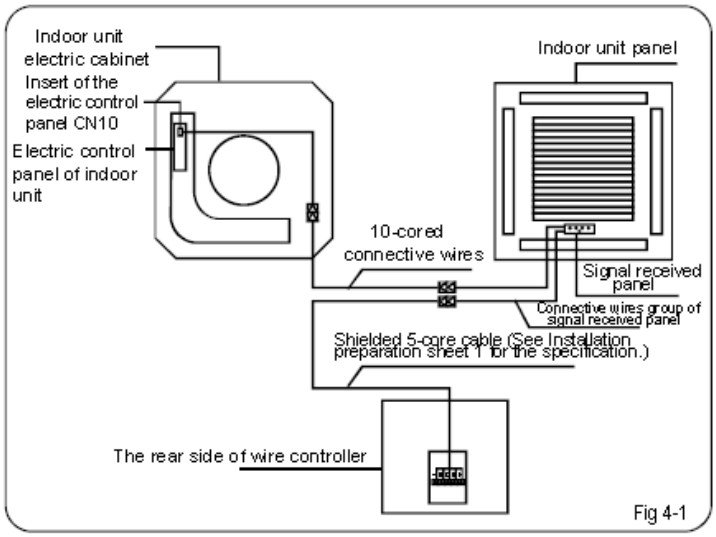
Over tighten the screw would cause rear cover deformed and LCD damage.

When installation, please maintain the screws and wire controller at the same height level without deformed.

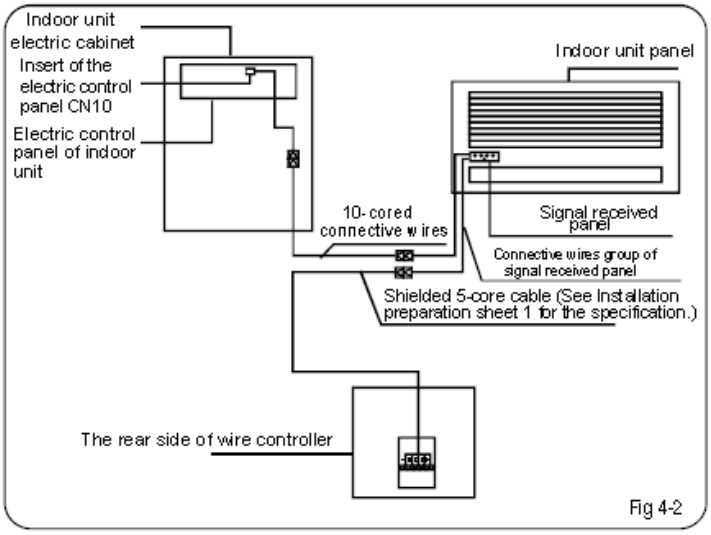
When installation, please reserve a certain length of wire controller connective cable for future maintenance to take off the wire controller.

3.2.4 Wiring diagram for wiring wire controller with air conditioner

1. Wiring diagram of wire controller connects with four-way cassettes indoor unit


Indoor unit electric cabinet
Insert of the electric control panel CN10
Electric control panel of indoor unit
Indoor unit panel
10-cored connective wires
Signal received panel
Connective wires group of signal received panel
Shielded 5-core cable (See Installation preparation sheet 1 for the specification.)
The rear side of wire controller
Fig 4-1

2. Wiring diagram of wire controller connects with ceiling and duct type indoor unit


Indoor unit electric cabinet
Insert of the electric control panel CN10
Electric control panel of indoor unit
Indoor unit panel
10-cored connective wires
Signal received panel
Connective wires group of signal received panel
Shielded 5-core cable (See Installation preparation sheet 1 for the specification.)
The rear side of wire controller
Fig 4-2

3.2.5. Specification

Input voltage	DC 5V
Ambient temperature	-5~43℃
Ambient humidity	RH40%~RH90%

3.2.6. General function

Main functions of this wire controller as follows:

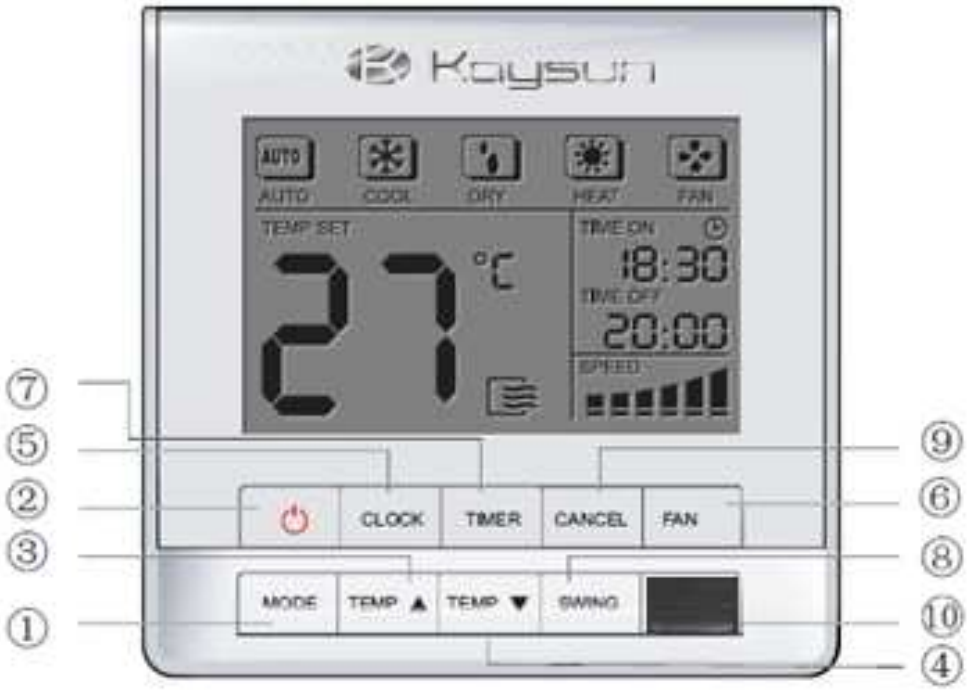
Connect with indoor unit via the five ports of A, B, C, D, E.

Set operation mode via buttons control.

Provided with LCD display function.

Provided with timing function.

3.2.7. Name and operation of the button on the wire controller



1	**Mode select button**
2	**ON/OFF button**
3	**Adjust button**
4	**Adjust button**
5	**Time button**
6	**FAN speed button**
7	**Timer button**
8	**Swing button**
9	**Cancel button**
10	**Infrared remote receiver**

① MODE Select Button:
Each time you push the button, a mode is selected in a sequence that goes from AUTO、COOL、DRY、HEAT and FAN as the following figure indicates:
AUTO → COOL → DRY → HEAT → FAN
② ON/OFF Button:
When in off state, press this button, the indicator is on, the wire controller enter into on state, and send setting information to indoor PCB . When in on state, press this button, the indicator is offhand send instruction. If timer on or timer off has been set, it cancel this setting then send instruction to stop the machine.
③ Adjust Button :
Press this key to increase the indoor temperature settings, 1 degree to be increased for every once press.
④ Adjust Button :
Press this key to decrease the indoor temperature settings, 1 degree to be decreased for every once press.

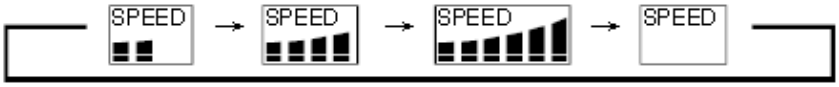
⑤ Time Button:

Normally, LCD displays the current time of the setting clock (however, LCD would display 12:00 when the first time power to the wire controller or reset the wire controller). Press this key lasting for 4 seconds, the clock will flashing at the frequency of 0.5 Sec. by using and to adjust the time, 1 minute to be increased/decreased for every once press the▲ /▼ . Long pressing the▲ /▼ , it will increase/decrease 4 times/sec, 10 mins/time. Release the key when finish the clock setting, the time will stop flashing automatically.

⑥ FAN SPEED Button:

Press this button consecutively, the fan speed will circle as follow:

(This button is unavailable when in the mode of AUTO or DRY.)



⑦ TIMER Button:

Press this button, the Timing will turn on. Set Timing ON time by ▲and ▼. The clock will increase and decrease once every 10 minutes; long pressing the keys it will increase/decrease once 10 minutes/0.2 seconds.

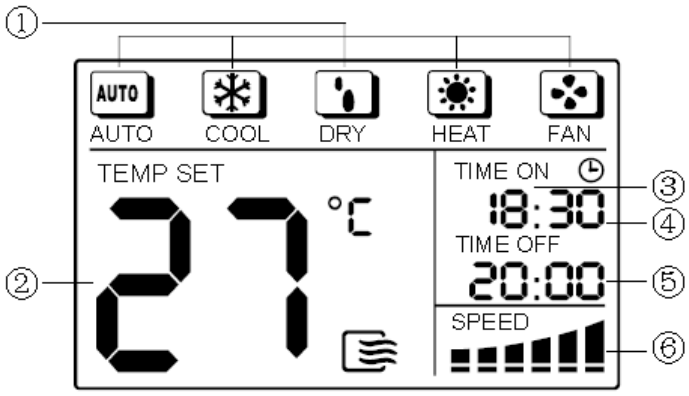
⑧ SWING Button:

In the unit ON status, press this key at the first time, the Swing type air supply mode to be activated. Press this key again, the function will cancel (This function could available only equip with the coordinated entire units system.)

⑨ CANCEL Button:

Push this button to cancel the TIMER settings.

3.2.8. Indicators and functions



① Operation mode indication ② Temperature display zone

③ Time ON indication ④ Time indication

⑤ Time OFF indication ⑥ Fan speed indication

① Operation mode indication:

Press MODE to display current running mode. AUTO, COOL, DRY, HEAT and FAN can be selected. (HEAT function is invalid for cool only type unit.)

② Temperature display zone:

Display the set temperature. Adjust temperature via▲ and ▼. No display in this area if the unit is on FAN mode.

③ Time ON indication:

During setting the Timing ON or after set the Timing ON, the LCD would display “TIME ON”.

④ Time indication:

Normally, LCD displays the current time of the setting clock. When press this Button last for 4 sec. the clock will flash at the frequency of 0.5 sec. By using▲ and▼ to set the minute. Release the button when finish the clock setting, the time will stop flashing automatically, which means time setting successfully.

⑤ Time OFF indication:

During setting the Timing OFF or after set the Timing OFF, the LCD would display “TIME OFF”.

⑥ Fan speed indication:

Press SPEED to display the current wind speed. AUTO, LOW, MED and HIGH can be elected. The default state is high fan speed for the unit without medium fan speed.

3.2.9. Operation instructions

1 AUTO operation

Switch on the power and running indicator light on indoor unit flashes.

1. Press MODE to select AUTO.
2. Adjust temp via ▲and ▼. Generally the range is 17℃~30℃.
3. Press ON/OFF and running indicator light on indoor unit is lightened. Air conditioner will work on AUTO mode and fan speed is AUTO which is non adjustable. Press the ON/OFF button again to stop the unit operation.

NOTE

In the AUTO mode, the air conditioner can logically choose the mode of COOL, FAN by sensing the difference between the actual ambient room temperature and the set temperature on the remote controller. If the AUTO mode is not comfortable for you , the desired mode can be selected manually.

2 COOL/HEAT/FAN operation

1. Press MODE to select COOL, HEAT or FAN.
2. Adjust temp via ▲and▼ . Generally the range is 17℃~30℃.
3. Press FAN SPEED to select AUTO, LOW, MED or HIGH.
4. Press ON/OFF and running indicator light on indoor unit is

lightened. Air conditioner will work on the set mode. Stop operation via ON/OFF.

NOTE

The FAN mode cannot be used to control the temperature. While in this mode, only steps 1 、3 and 4 may be performed.

3 DRY operation

1. Push the MODE button to select DRY.
2. Push the TEMP button to set the desired temperature from 17℃ to 30℃.

3. Push the ON/OFF button. The operation lamp lights and the air conditioner starts to operate in the DRY mode. Push the ON/OFF button again to stop this unit operation.

NOTE

Due to the difference of the set temperature of the unit and the actual indoor temperature, the Air Conditioner when in DRY mode will automatically operate many times without running the COOL and FAN mode.

4 Timing set

TIMER button is for set TIME ON /TIME OFF these two types of timing.

Timing ON time and CLOCK are display at the same displayed zone. When the Timing ON has been set, the CLOCK displayed zone would show the Timing ON information. Press the CLOCK key to query the current time, which would last for 3 seconds and then recover to Timing ON information.

During the setting the timing, press the CANCEL button to exit the timing set.

For the first time press the TIMER button, the icon of “TIME ON” will display and the timing time will flashing at the 1Hz, while the “TIMER OFF” icon will not show and the timing off time would not flash (in the case of without timing off setting, the information will not show).

Press the TIMING key again, the “TIME OFF” icon will show and the timing time will flashing at 1Hz; while the “TIME ON” icon will not show and the timing on time would not flash (in the case of without timing on setting, the information will not show). Button pressing base on this circulating logic.

4-1 Set the Timing ON time only

1. Press the TIMER button, the LCD in the wire controller will show “TIME ON”, at the same time the time zone will display the last setting time, which flash at the frequency of 1Hz, the wire control enters to Timing ON status.

2. By using ▲and ▼to set the desired Timing ON time.

In case originally provide with timing set in the system, please press the CANCEL button to cancel the current settings.

3. After 0.5 seconds of done the setting, the wire controller will deliver the Timing ON information, 2 seconds later, the Timing ON information will stop flashing.

Timing ON has been set.

4-2 Set Timing ON and OFF

1. Press the TIMER button, the LCD in the wire controller will show “TIME ON”, at the same time the time zone will display the last setting time, which flash at the frequency of 1Hz, the wire control enters to Timing ON status.

2. By using▲ and▼ to set the desired Timing ON time.

3. Press the TIMER button again, the LCD in the wire controller will show “TIME OFF”, at the same time the time zone will display the last setting time, which flash at the frequency of 1Hz, the wire control enters to Timing OFF status.

In case originally provide with timing set in the system, please press the CANCEL button to cancel the current settings.

4. By using ▲and ▼to set the desired Timing OFF time.

5. After 0.5 seconds of done the setting, the wire controller will deliver the Timing OFF information, 2 seconds later, the Timing OFF information will stop flashing.

Timing OFF has been set.